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ISSUE 46 ● £2.95 ● JULY 1994

CHECK THIS OUT

A TAPE STUFFED WITH GOODNESS

BONECRUNCHER

A DAMNED ODD GAME

MAYHEM: PIPELAND DEMO

ONE MASSIVE COMPLETE LEVEL

QUADRAPED TEARAWAYS

MINDBENDING MUSIC DEMO

THE INVASION BEGINS!

Get ready for a hot new wave of games heading our way from Europe...

page 18

CHANNEL TUNNEL
TO FRANCE

When you buy this magazine from the newsagent's you shouldn't be able to read this. If you can, then someone's swiped the covertape. Ask your newsagent for a replacement.

Tape to disk SMART! Turn to p.5.

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Well, we think this should win cover of the month, anyway.

07

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COMMODORE FORMAT

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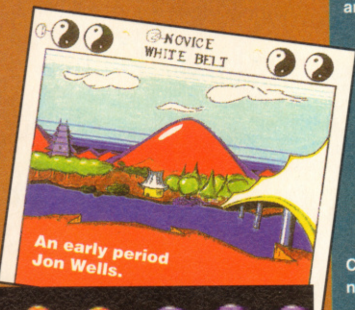
16 THE EUROPEAN INVASION BEGINS

1994 is the year that the Channel Tunnel opens and the UK is physically attached to Europe for the first time since it made a run for it back in an age before even *Coronation Street* had begun. And about time too, because there's loads of C64 software on the continent that we never get to see, but we reckon that's all about to change...

34 THE MAKING OF 10TH DAN

It's month three in the creation of the game that the authors promise will be the beat-'em-up to end all beat-'em-ups on the C64. This time around we get to see the first visual evidence to back up their claim.



An early period Jon Wells.

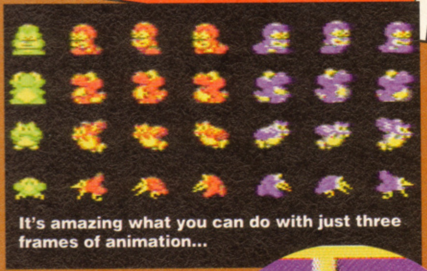
22 GAMEBUSTERS

- The final level of *Mayhem* gets busted
- Essential hints and tips for the *CF44* powerpack game, *Carnage*.
- A smokin' *Wizball* guide.
- *Stormlord* maps and solutions.
- Plus (as they say) loads, loads more...

Wizball gets busted.

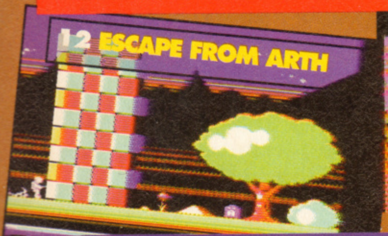
30 BUT IS IT ART?

If you don't look good in a smock, then shun those oils and paint by numbers instead. This month those top geezers from Apex show you how to spruce up your sprites, okay.



It's amazing what you can do with just three frames of animation...

GAME REVIEWS... GAME REVIEWS



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12 WILBERFORCE

11 SQUARESCAPE

ON THE POWERPACK...

BONECRUNCHER
In a hotel from hell you have to melt down skeletons to keep your customers clean.

MAYHEM: PIPELAND DEMO
One level of this smokin' game is worth 20 of your average platformer.

QUADRAPED TEARAWAYS 2
Turn on, tune in and groove to the silicon sounds.

TECHIE TIPS
All this month's listing presented in an easy to access form (ie, you don't have to type 'em).

FULL GAME
COMMODORE FORMAT
BONECRUNCHER
TECHIE TIPS
POWER PLUS PACK
MAYHEM PIPELAND
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There's a wealth of C64 software on the continent just waiting to be discovered. We check it out.

30 BUT IS IT ART?

More top tips for improving your computer graphics from the men who brought you *Creatures, Mayhem* and *Cyberdyne Warriors*. This month: sprites

34 GAME DIARY: THE MAKING OF 10TH DAN

Month three: we get the first glimpse of some graphics (but don't build up your hopes).

REVIEWS

11 SQUARESCAPE

Cubist, socio-political comment? Or a post modern nightmare? Or maybe just a blocky puzzle game?

12 WILBERFORCE

20 million years in the making! Give or take a few million. Who is this Wilberforce anyway?

12 ESCAPE FROM ARTH

What has Arth ever done for us? Okay, it invented the matter transmitter, and the interstellar overdrive, and sub-space soap operas... but apart from that...?

16 PD FORMAT

It's cheap, but is it cheerful? Or even mildly amused? Or downright sad, come to that?

SERIOUS STUFF

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You ask. Jason Finch answers. What a concept.

32 MEAN MACHINE CODE

You don't ask, Jason witters on anyway. If you want to learn about Machine Code, though, take notes.

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20 GAMEBUSTERS

More tips than an in-depth *Watchdog* investigation into potentially lethal fountain pens.

26 BACK ISSUES

More back issues than we had for sale last issue.

TURN THE PAGE FOR THE FULL COVERTAPE BRIEFING...

If you found it lovingly stuck to the front of this copy of Commodore Format, then Simon Forrester is here to tell you all about it. Well that may not be strictly true...

POWER PACK

46

FULL GAME
COMMODORE FORMAT
BONECRUNCHER
TECHIE TIPS
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PLUS
MAYHEM
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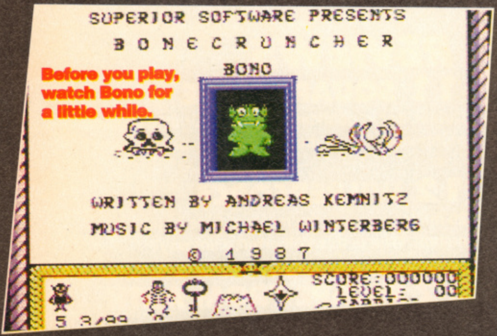
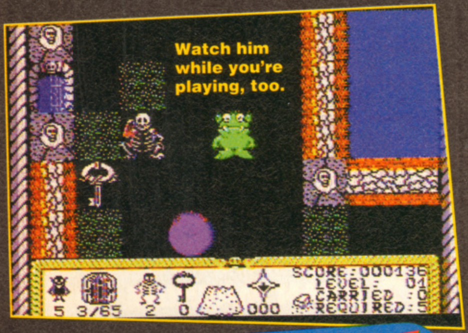
DEMO GAME
QUADRAPED TEARAWAYS 2

BONECRUNCHER

FULL GAME


SUPERIOR SOFTWARE PRESENTS
BONECRUNCHER
BONO
WRITTEN BY ANDREAS KEMNITZ
MUSIC BY MICHAEL WINTERBERG
© 1987

Before you play, watch Bono for a little while.

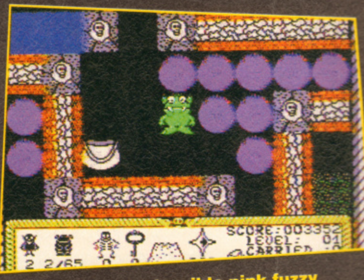


Watch him while you're playing, too.

You might have thought Fawlty Towers was a pretty odd hotel, but wait until you see the minus four-star establishment that *Bonecruncher* is set in. You take charge of Bono, an odd troll-type thing that runs the hotel (as opposed to an odd troll-type thing that fronts a rock band). At the minute, you've got several chambers full of bathers, all of whom would like a bar of soap.

As the nearest thing to a maid is you, there's work to be done. Your job is to collect five old skeletons and chuck them in a pot. You can then boil the skeletons down into bars of soap to take upstairs to the bathers for them to use for whatever ends they see fit.

Use the joystick to move Bono up, down, left and right, while hitting the fire button and moving the joystick at the same time will, er, do something to something next to you (such as collect something, push something else or dig what's left). You collect the skeletons by walking into them, and you throw them into the cauldron by simply touching the side of the pot.



It's attack of the horrible pink fuzzy things! Run for your lives! Glook alert!

QUICKSTART INFO

Up, down, left and right..............**Move Bono**
Fire & direction..............**Dig in that direction**
Other Info Try to trap the bad guys by leaving them circling an island of earth – it keeps them safely out of your way.

U GOT THE GLOOK

Before you carry on, you might like to take a look at the many nasties (and I'm not talking about the dodgy bathers) around the place. If a monster touches you, there'll be some truly disgusting noises and several damp squelches, so you'd better work out some defence against them. Experience (and a squiz at these instructions) will tell you to do one of three things. First, you could trap them using a glook. They'll turn into skeletons that you can use later to make more soap.

You had to ask, didn't you? You couldn't have waited. A glook is a strange blobby thing that loves soap. If it smells it, it'll happily bounce over and take a swig. You can tell which way the smell is blowing with the wind-meter on your control panel. Glooks are the one type of strange fing in the place that won't do you any damage, so you can push them out of the way.

Sorry – there are two strange things that won't hurt you (your main weapons being fear and surprise). The second and only marginally more intelligent strange thing is Fozzy, a friend who wanders around getting dazed a lot. He's also the second way of dealing with monsters. He can hold them down while you walk past them, but he's only got a limited lifespan and can be killed like anyone else.

Your third defence against a monster is to lure it into a trapdoor, though you won't be able to retrieve its skeleton once it's dead.

If you thought the monsters were nasty, though, you should see the spiders. These horrible thingies are utterly invulnerable to everything, but can kill instantly. They wander mainly around the edges of rooms, and feed off skeletons. Fozzy is invulnerable to their bites, though, so you don't need to worry about him (it's probably the hat, or something).

When five bathers have been, erm, seen to, you'll be given a key and matching door that'll take you to the next chamber. So next time five naked men upstairs ask for a bar of soap each, reach for the bones.

NO LOAD ZONE

If you're having a hard time loading this month's Power Pack then plonk the duff tape in a jiffy bag, slip in a tape-sized SAE, seal it up and send it to:

*CF*46 Tape Replacement Service,
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POWERPACK
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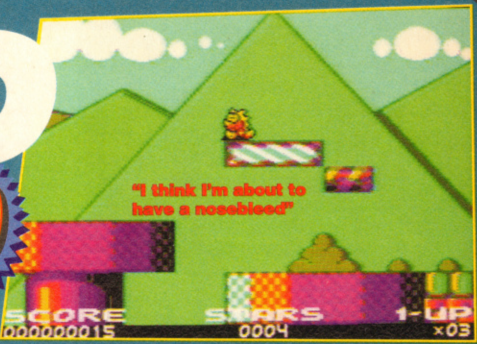
PIPELAND

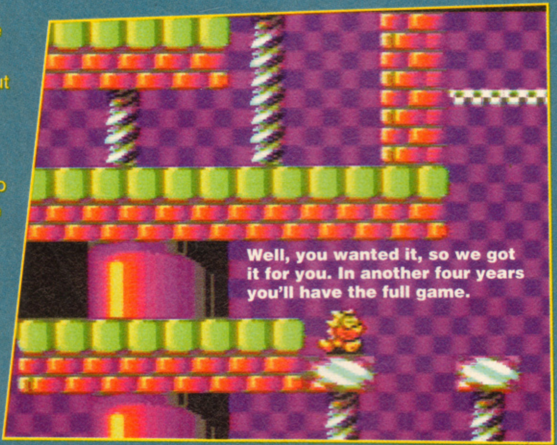
DEMO



"I think I'm about to have a nosebleed"

You loved *Mayhem In Monsterland*, didn't you? We certainly did, as we gave it 100 per cent a few issues back (those heady days). Despite the many questions like 'what if something even better comes along?', we're still riding with this one – nothing will ever beat *Mayhem* as far as we're concerned (saying that's just asking for trouble, really, isn't it?).

And in case you aren't convinced about the game's greatness yet, this month's demo should do the trick. We've collaborated with the Rowlands to bring you this fully playable second level (not that the first was anything below excellent – actually if you wait long enough you might be able to collect the whole game just by buying *Commodore Format*).



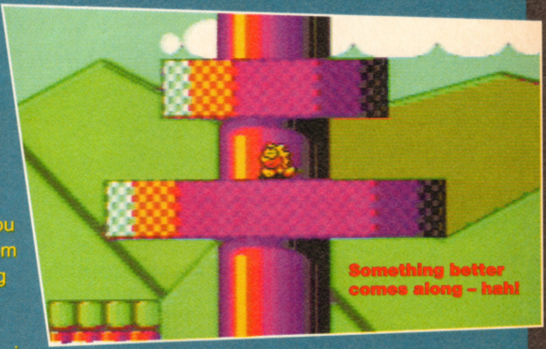
Well, you wanted it, so we got it for you. In another four years you'll have the full game.

Your mission, should you have a few minutes, is first to collect bags of happy dust scattered across the sad version of Pipeland and take them to the big dinosaur bloke you'll find lurking suspiciously somewhere (we're not saying where 'cos finding him is part of the challenge). This guy he knows will then scatter the dust across Pipeland, making it a happy place again.

It's at this point that Mayhem goes on his second run, a mission to collect the gold stars that will now be hanging about the place. Great. First he saves the place, then he robs it. There are several meanies to stop you at every step of your mission which can be killed by either jumping on them or charging through them.

Controlling little Mayhem is really very easy. You move him left and right with the joystick, as well as making him jump (up) and crouch (down). If you're on the happy section, you can make Mayhem charge by holding down fire and pointing the little yellow speed-dino in the direction you want to travel.

Have fun, but remember – if at any point you begin to see stars and you're not goggling at your C64 screen at the time, please seek medical advice immediately (*closing joke © Warner Bothers cartoons 1939*).



Something better comes along – hah!

QUICKSTART INFO

▲ UP	JUMP
◀ LEFT	LEFT
▶ RIGHT	RIGHT
▼ DOWN	CROUCH
● FIRE	CHARGE

QUADRAPED TEARAWAYS 2

Following the recent spate of *Mayhem Mega Mix* music demos on these metres of tape, we thought it might be a nice idea to show you what some other C64 composers are up to. This month sees (or rather hears) the excellent *Quadraped Tearaways 2* demo, a music demo of high quality indeed.

To select the any of the tunes listed on-screen, simply hit the numbers next to the tune name you want to hear. That's it. Well almost it. Remember to turn the volume up, though, or you'll get very bored (well, you have to take the hard of thinking into account).

Oh yeah, and before we go, I think Dave would thank me from the heart of his bottom for pointing out that we're not repeatedly shoving a huge dirty great spelling mistake in your faces here for no good reason. We know that the word should be QUADRUPED, but the demo writers decided to spell it that incorrectly, and we respect that (and wouldn't suggest they just can't spell).

TECHIE TIPS

They're tips about techie things, but we're really not interested in them, are we? There's too much other good stuff on the tape to bother with technical bits and pieces, that are, frankly, just the listing mentioned in Jason Finch's Techie Tips section (starting on page 27), reproduced on the tape for people too lazy to type them in themselves. Which, I feel, is encouraging laziness and complacency and will lead to the downfall of morals in our society.

Resist! Resist! Type in the these listings manually, feel proud and keep Britain from descending into an amoral pit of despair and amorality… Yeah – sod off from our covertape, Jason. (*Right, this is war! – Jason.*)

ALL YOUR OWN WORK

It could be, you know – your work, that is, on the covertape. And just think of the glory and world-wide fame that comes with that feat. So if you've written any software you think the C64 world deserves to see, send it along to Covertape Submissions, *Commodore Format*, 30 Monmouth Street, Bath, Avon, BA1 2BW.

Your software will stand a better chance of smoothly gliding onto the tape if you include a letter stating that your contribution is all your own work, and that you give permission for it to be used. Failing that, include your address and telephone number for us to contact you with. We might even pay you.

Tape to disk

If you're lucky enough to own a disk drive and want to use it as well as admire it, then you can get hold of this month's Power Pack on disk. Simply cut out the token on the tape inlay card, write your name and full address on a piece of paper, pop 'em in an envelope with a cheque or postal order, made out to Ablex Audio Video, for £1.50 (to cover duplication costs) and send it to:

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SNIPPETS

When the info highway overloads your senses, we trawl the backroads to catch the C64-relevant bits...

COMMODORE US FOR SALE

Got a few hundred million spare and would like to see Commodore supporting their 8-bit marvel once again? Then nip across the Atlantic and put a bid in for Commodore US which has just gone into voluntary liquidation.

Nobody is saying a word as to exactly why, but the International Commodore heads went ahead and did it anyway, gaining themselves a massive amount of cash in the process while cutting off their creditors (the people they owe money to).

There's been a lot of speculation as to exactly who'll be buying Commodore and what all that money could be for, but it's said that many industry giants are interested. Amstrad have also expressed an interest, but let's hope they're not successful otherwise you can expect to see an Amstrad 64 that takes low-density, highly-priced 4.7-inch disks in the near future.

The future of the Amiga is placed in slight jeopardy by all of this, but it's been decided that Commodore will continue trading (God knows why, when they managed to lose $356.5 million last year), and so the Amiga will live on.

I think we can forget that C4064 for Christmas, kids.

BURIED TREASURE

And we helped to bury it. Y'see when we reviewed Treasure Isle in CF40 and gave it very respectable 82 per cent, we gave the wrong details about buying the darned thing, and consequently nobody did, which is a bit of a shame. So here are the correct vital statistix:

Treasure Isle **is a graphic/text adventure costing only £2 on tape or disk. To order a copy make cheques/POs payable to Jon Wells and send it to Visualize, 9 De Gray Road, Gaywood, King's Lyn, Norfolk PE30 4PH. Got that? Good.**

LEMMINGS FLOCK TO THE EVERGLADES

A company called Everglade are just about to get in some stocks of *Lemmings* and *Creatures 2. Lemmings* has been notoriously difficult to get hold of, so this is great news for all you small furry rodent hunters out there (and we're not talking Rentokill agents here).

If you'd like to put your order in for a copy of either game, just write to Everglade, 68 Telford Street, Inverness, Scotland, IV3 5LS. The company have asked us to tell you to SEND NO MONEY yet, though – this looks like a mail order company with the right idea, doesn't it?

Here's one I prepared earlier.

ELSPA GET SERIOUS, AGAIN

That's right – they're back, and they're angry. ELSPA have recently set up a Crime Unit to take over the burden from FAST. The new unit, headed by Chief Investigator John Loader (brilliant – this should be Batman), who's got a small army of snoops at his disposal. Among other things, they intend to crack down on illegal pornographic and obscene software, but catching people in dirty raincoats isn't what they're all about. Chief Loader set the record straight:

"The main thrust of this dedicated Crime Unit is to investigate games piracy. As a part of this drive, we are determined to investigate and carry through prosecutions of those individuals involved in what is, essentially, criminal activity."

Roger Bennet, ELSPA's general secretary had a startling number on paper: "With the games software industry estimated to be worth £960 million to the UK this year, we can't afford to let these activities continue."

Pirates beware – they're coming for you, and they know where you live.

BE VERY ALARMED

Having a C64 is like having a Betamax video – it's the one thing that burglars leave behind (but intelligent people know it's the superior product anyway). If your machine happens to be gold-plated though (I know mine is), you might be a little more concerned about someone shoving it into a bag along with your video and hopping out of a window. At this point, you have two options. First, you could buy yourself a Wobbler alarm, a little box from L&C Computer Alarms, that'll scream its head off whenever the computer is unplugged, stopping any burglar with an ear-piercing wail.

Though these wobbly devices were originally designed for use on a PC, you can buy a version to clip onto the back of any piece of hardware you want to protect.

The alarm is a wonderful 105dB at one metre, which is enough to sedate a rampaging bull.

For more information, contact L&C Computer Alarms at 54 Walton Road, Clevedon, Avon, BS21 6AG. Failing that, ring 0275 874507.

Your second option is to move into the 36th floor of a high-rise flat, incidentally.

Don't let him get away with it!

Protect your valuable hardware, data and software applications

This could be the one time you want your C64 to throw a wobbly.

FUTURE ENTERTAINMENT SHOW '94

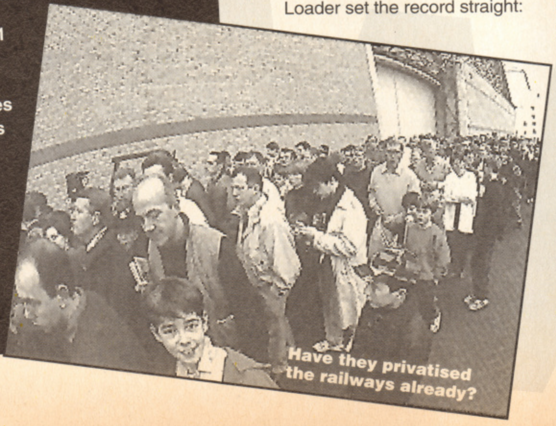
It's back, and it doesn't seem like five minutes since we all went to the last one, does it? This year's is going to be a show to end all shows, though, running from the 26th to the 30th October, at Earls Court in London.

If you order a ticket before 31st July, you'll also be entered into a competition to win a voucher worth £100 at the Silica Systems stand. To get your tickets now, just ring 0369 4235 – you can get them for a discount at £6 in advance as opposed to £7 on the door.

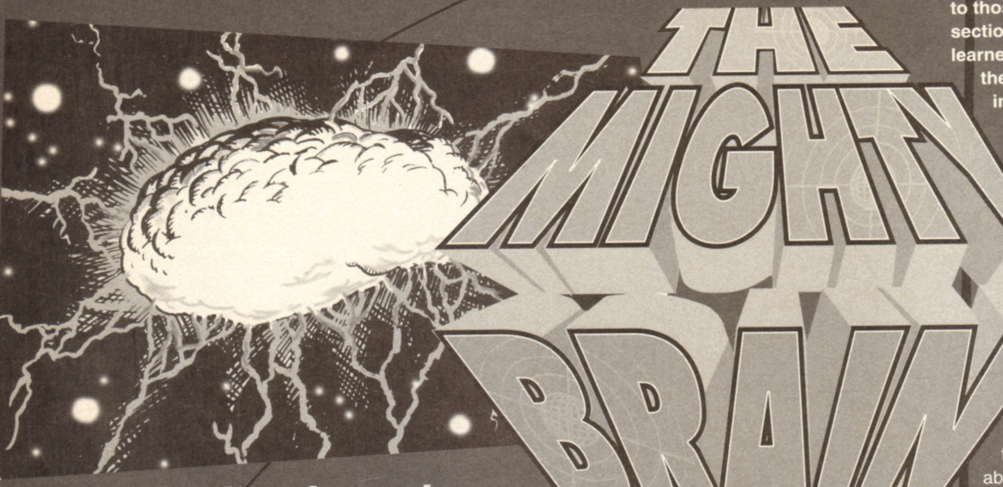
And you can't afford not to go, otherwise you'll be missing out on the very latest in entertainment technology, Multimedia, FMV, CD ROM, and every other hot new development this year. The show will be a lot more interactive this year, as well, with loads of workshops run by Future magazine teams and chances to meet Future bods.

Still not convinced? Okay then – this is it. You could win one of 10 single tickets we're giving away by answering the following question (and you can't possibly get this one wrong): in which city is this magazine written?

If you're really having major problems, a little investigative work should set you straight. Send your entries in by mail only to I'm Too Cheap To Buy A Ticket, *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, BA1 2BW. All the normal competition rules apply, as well as the rule stating that all entries must arrive at the office by September the 1st to be included in the draw.



Have they privatised the railways already?



THE MIGHTY BRAIN

From somewhere beyond imagination, between Scylla and Charibdes and down the back of the settee, comes the entity know only as The Mighty Brain. Now he's here and he won't rest until he's answered some letters...

STAY TECHIE

Dear TMB,

In previous issues of *CF* a few people have suggested that Techie Tips should be scrapped. I disagree strongly. *Commodore Computing International*, *ZX Computing* and *Let's Compute!* all had programming sections until some geeks suggested that they should be disposed of and and so this was done and less copies were sold.

Where are these magazines now? They no longer exist, thanks to those who persisted about programming sections. I find Techie Tips very useful and have learned much since it began. I think Techie Tips is the best bit of *CF* and should be left alone for interested programmers to enjoy. Obviously many people are mainly interested in games, but it should be remembered that if it weren't for programmers there wouldn't be any games.

This should explain what could happen to the great *CF* if Techie Tips were to cease.

Long live TMB, Techie Tips and the *CF* crew. Long live the C64 and the 8-bits. Long live *CF*.

Paul S Gibbs, Leeds.

Hmm, I doubt very much whether the magazines you mentioned crashed because they dropped their techie pages. But we have absolutely no plans to drop Techie Tips. It's very popular, and will be here until the end. **TMB**

WE ARE NOT ALONE

Hunga! Thy Master Brain,

Thee art wonderful and all-knowing. But *Commodore Format* is not the only survivor of the Invasion Of The Other Formats. There is a German publisher called CP-Verlag, which publishes two disk-based magazines called *Game On* and *Magic Disk 64!* which come complete with paper mags covering the other formats such as PCs, Amigas, handhelds, etc. This combination, called *Playtime 3 In One Kombi* (*snappy title – TMB*) is, of course, in German, but most of the games, demos and utilities are not. The presentation of both *Game On* and *Magic Disk* is gorgeous.

You said that *Commodore Format* is not in a position to move into the import business at the moment but that a UK distributor of these magazines might become interested. Well, apparently one already has, because I read in the last issue of *Playtime 3 In One Kombi* that Future Publishing and *Edge* magazine gave their support. Sounds familiar? Yes!

I hope you will print this letter because I get complaints from both Jason MacKenzie and Jon Wells (Visualize/*CF* writer) that games/demos/utils I can get through *Game On* and *Magic Disk* never reach the English scene. As Jon Wells says:

"I'm glad to see that other programmers in other countries are doing stuff for the C64, but it still doesn't help the fact that the C64's having problems – over here in England it is in decline, whereas over there where you are (Holland) it's more in demand. There's only a handful of English programmers doing games commercially for England. The games you talk about (*Super Nibbly Plus*, *Fred's Back 3*, *Cyberblocks*, *Saliva Kid* – Jordan) aren't available over here, so none of the public or mags get to find out about them – THEY DON'T EVEN KNOW THEY EXIST."

If Future Publishing supports the mags, then I think *CF* could pay attention to them, or some of the games. Known groups from the old C64 scene, like Cosmos Designs, Light, Maniacs of

➤

CARNAGE TRASHED MY BRAIN

Hi Brain,

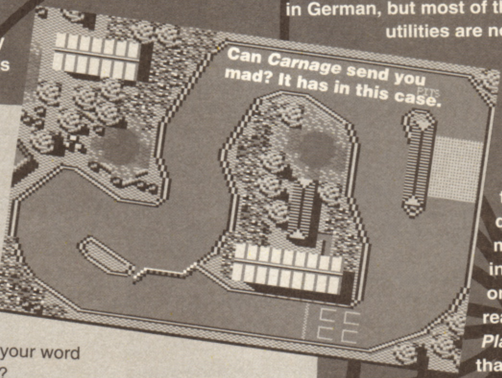
Fancy a few meaningless questions? Well, you've got them anyway.

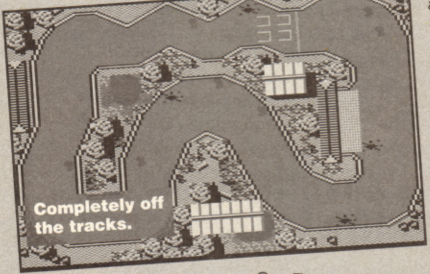
1 Can you tell me why, after so many years of throwing my C64 at my broken wall, it decides to die after accidentally falling out of my bedroom window?
2 How do you control bad tempers?
3 Isn't it just typical? I got to course seven on the excellent *Carnage* after winning a brill engine, loads of nitros and mines, and you can guess what happened next. That's right, I got to course eight and completed it. That's because I'm a mega-brill driver with buckets of skill and confidence.
4 How big is Uranus?
5 How big is Ollie's?
6 My peas keep falling off my plate.
7 Do you miss?
8 Well, enough about her. Do you know of any decent platformers in the pipeline? *Mayhem In Monsterland* was ace. We need more games like that.
9 Do any of the *CF* crew like hot dogs? I do.
10 Guess what? My mate slipped the word 'antidisestablishmentarianism' into a conversation three times. Is this a record?

I hate to have to go now, but the queue for the padded cells is getting longer.

Endtrans.

New TZ.


Can Carnage send you mad? It has in this case.


Completely off the tracks.

1 Are you sure it was an accident? It sounds like the poor machine was looking for merciful release.
2 I don't.
3 We've only got your word for that, haven't we?
4 Ah, the old Uranus joke.
5 Proof positive that the old ones aren't always the best ones.
6 They're probably trying escape being shovelled into the orifice that produced that Uranus joke.
7 Not often, no.
8 The Electric Boys have announced a *Flashback*-influenced game for the C64. How good it'll be is anyone's guess at the moment, but the stuff we've seen from the EB's so far has been impressive, so it should be good. Our European overview on page 18 has news of a few more platformers as well, so check that out.
9 Let's face it – if it's food, Dave loves it.
10 'Antidisestablishmentarianism' is indeed a difficult word to slip into conversation especially if you're not sure what 'antidisestablishmentarianism' actually means. But if slipping 'antidisestablishmentarianism' into conversation three times was a record before, it certainly isn't now. Why? Because I'm just about to slip 'antidisestablishmentarianism' into this conversation for a fourth time, that's why. **TMB**

Noise, Blackmail, Electronic Brains and others contribute with their (non-*SEUCK*!) games and splendid demos/utils. Of course, you will need a disk drive for the diskmags, but maybe *CF* can help you out there (*er, how exactly? – TMB*).

Or *CF* could do a review of the disks and do them credit. For the price of £3.50 I can't let these disks slip (*is that a pun? – TMB*). See it as I see it; I buy a 150 page paper magazine and get the C64 disks for free! It's even essential for you if you own, let's say, an Amiga, a C64 and a Sega Megadrive. All your fave games are previewed.

I say goodbye to thee.
Jordan Van Der Elst, The Netherlands.
PS CP-Verlag's address for information is: CP Verlag, GmbH & Co.KG, Game On/Magic Disk, Isarstrasze 32-34, 90 451 Nurnberg, Germany. Tel Germany 911/96832-0.

You know, it often amazes me how you humans ever manage to organise anything when your systems of communication are so inefficient. Here I am, in constant mental contact with planets light years away while you lot never seem to know what's going on in the next room, let alone the next country.

Rest assured I've informed this hopeless rabble called the *CF* crew about CP-Verlag already, and Dave's on the phone at this very moment. He'll probably get connected to an answer-phone.

By the way, you're a bit misinformed about the *Edge* connection – the deal is the other way around completely and allows CP-Verlag to reprint excerpts from *Edge* in German.

There's no reason why UK C64 users shouldn't be able to order games direct from the continent. If we receive any new European games here at the *CF* offices we will be more than happy to review them and tell our readers how they can get hold of them. It seems the sensible thing to do, rather than wait for UK distributors to wake up to what's happening. And we're also ready to discuss with anyone the possibility of putting their stuff on the covertape. **TMB**

TANK GIRL

LETTER of the MONTH

Dear TMB,
Hello! I'd just like to say a few choice words. I'd be eternally grateful if you'd print my letter. Well, perhaps not quite, but pleased, anyway.

I think you're great. No, I really do. I'm not joking or backside-kissing or anything like that. It's the truth. I love the way you successfully manage to put down every brainless, infantile, poo-head who dares to suggest that the C64 is past it.

I'm in the fifth year at school and every time some pathetic little jessie gets out an edition of *Total!* or *Mega* I think, "Kerr-ist" and explain to them the various limitation of their ridiculously expensive plastic boxes. True, they often walk off muttering, "stupid cow," under their breaths but a swift knee to the groin often cures them of that kind of cheek.

You see, I'm the only long-haired, Doc-Martened, ripped-jeans wearing girl with a C64 I know and, God, I'm proud of it. I don't care if often I look like I have just escaped from the local loony bin. I have my Nirvana tapes, my Therapy? (and don't forget to print the question mark) T-shirts and, above all, my *Commodore Format* and I am very happy. So there.

Before I sign off, I'd just like to tell Simon 'Hairy Happening' Forrester that, although I've never seen his face (it's always covered with hair in the photos I've seen) or met him, I can tell he's a kindred spirit. I think he's the really sexy one, not Lisa Kellet.
Emma, Monmouth.
PS Curt Cobain will be sadly missed by me and everyone in my school (excluding teachers and said jessies).

Hmm, for a while there you sounded like one of the most intelligent, level-headed human beings I've ever had the privilege to have a letter from (well, apart from the knee in the groin bit). But I'm afraid that last paragraph blew it all.

Simon? Sexy? Perhaps on Halvertria in the Crab Nebula where they like their men with wobbly… (*shut up now, methane breath, or it's an unanaesthetised lobotomy for you, mate – Simon*). **TMB**

An vision of pure sex... is just out of shot.

FAMILY AFFAIR

To that one-celled microscopic blob at *CF*,
It is I, the older brother of that little twerp who has written in to you many times before (about twice…). You have printed both of his feeble excuses for letters. Next time you see a letter with his name on it (Ewan Macdonald) direct it to the bin, pronto. I believe one of his letters was printed very recently (*CF*44). One of his questions was, 'could you please tell me where *GEOS 2.0* is available from?' What a stupid question. Here it is for all you people desperate to lay your hands on the package.

Do you have *CF*41, 43 or 44? You do! Well, scan through any of these issues and you will come to a page full of advertisements (no, not Buy-A-Rama, the other one). Now, look around until you see a fairly small ad for a company called Shareware Plus. Read this ad and you'll discover what they want to do (*sell you something, presumably – TMB*).

BITS'N'PIECES

● Will there ever be a Mario game on the C64?
A McGlane, Ireland.

Though it's dangerous to say 'never' (especially if you're on Galgafrasis 7 where it translates as something you'd receive the death penalty for suggesting) it is extremely unlikely that any other games platform apart from those produced by Nintendo (Game Boy, SNES, Project Reality, etc) will ever see any Mario games. **TMB**

● When is *Mayhem* in the stores?
Adam Pearson, Anglesey.

The Rowlands still have no plans to let distributors and retailers make fat profits when they can benefit from their labours quite nicely themselves, thank you, selling the game through mail order. **TMB**

● How come the mags got less pages?
Chris Garland, Crayford.

Than what? **TMB**

● Is there a TMB fan club? If there is, how much does it cost to become a member?
Anonymous (and I'm not surprised after question like that – Dave)

There isn't one on this planet at the moment (the one on Cartethula in the Krasis Nebula is spectacularly successful, but return postage would cost an arm and a leg (not something that bothers the Cartethulans who've got plenty of both… and they're self regenerating). Why not start one up? **TMB**

● When games that are old and eventually become deleted what are the copyright restrictions on the games, because someone could possibly buy all the rights and do an amazing compilation of all the old classics?
Anonymous, Stafford.

If it were that easy the *CF* crew would be buying old games up like mad to put on the covertape. Unfortunately, copyright is a very complex and expensive business; no-one wants to just give away their intellectual rights. **TMB**

● is the C128 worth buying if I already have a C64?
Peter Turnball, Trowbridge

You'd be better off just getting a disk drive, frankly. Despite some improvements over the C64, the C128 was not a roaring success and very little software was written specifically for it. The first thing most C128 owners do when they turn on their machines is switch to C64 mode. **TMB**

● Why don't you offer subscribers the option of the disk powerpack instead of the tape version?
David Lensey, Saffron Walden.

Well, how shall I put this one down. A huffy, "well, we don't do subscriptions any more!" Or perhaps a sharp, "Your human mind cannot even comprehend the logistics involved." Or perhaps I should shut up, before someone remembers what my old mate Shakespeare used to say about protesting too much, and begins to figure out that, maybe, perhaps, those humans on the crew might be looking into the idea at this very moment. They're a bit slow, though, at these things. Give 'em time. Then again, no – hassle them. They deserve it. **TMB**

If you are planning to buy *GEOS 2.0* then I would recommend sending for disks *GEOS 1* and *GEOS 2*. Shareware Plus will then send you their shareware and *GEOS* catalogues.

I will warn you that *GEOS* is not cheap. And neither is *GEOS* shareware at £2.50 per disk. But the standard of software and speed of delivery is unmatched by any mail order firm I have dealt with. I think they are excellent and I hope you will too.

Anyway, I've raved on about GOES long enough, so I'll end with a few question:

1 Do you know where I can get hold of *Castle Master* for the C64?

2 What on Earth happened to *Beavers* from Grandslam? It looked really good.

3 Could you please ask Dave to put more utilities on the Power Pack.

Yours with more braincells than you've got,

Stuart Macdonald, Greenock.

1 Why don't you ask your brother?

2 It was never completed, which, to tell the truth, was no great loss.

3 I can tell him until I'm red in the front lobe, but he's a law unto himself. Actually, I think the crew are looking to buy in a few utilities, so keep watching this space. Well, not this space exactly… **TMB**

Is there a *Mayhem 2* on the way?

CONVERT

Dear M Brain,

Funny, that – I've got one too (*I think he means a Mighty Brain, which seems unlikely, but we'll give him the benefit of the doubt – TMB*). How else would you explain the transition I recently made from the Megadrive CD to, naturally, the C64? For the price of a Megadrive I have acquired one C64, one disk drive, one word processor, one tape deck and 30 tape games. The said console'n'seedy are gathering dust.

I am absolutely delighted with my purchase and in the last week or so I have persuaded two of my friends to buy a C64 – actually they didn't need much persuasion, just a blast on *Creatures*. Please don't do what *Commodore Force* did and shut up shop.

You aren't going to believe this but until I bought my C64 I had never heard of the computer. Another thing – I'm 52 years old. Just shows what advertising can do (*I'm not entirely sure I follow the logic in that – TMB*).

Ben Kearney, South Wirral.

I just hope you convinced your two friends to buy *Commodore Format* as well. **TMB**

EXCESSIVE

Dear TMB,

I have questions in need of answering.

1 Is *Mayhem 2* coming out?

2 Is it true you work in the same building as crap like *GamesMaster*?

3 I have an Amiga as well as my C64 and I like my C64 better. To anyone considering buying another computer, I say, 'Don't'.

4 You should have been nicer about *Commodore Force* – they weren't that bad.

5 Is *Last Ninja 3* worth buying?

6 Is *Lemmings* worth buying?

7 Who are you, TMB?

8 Is *Bug Bomber* any good?

9 Am I boring you yet?

10 Do you like Iron Maiden?

11 Erm…

12 Aaaaaa…

13 Well…

14 What football team do you support?

15 Can I get the *CF* team's signatures?

Keep up the good work. Your mag deserves 100 per cent.

James Johnstone, Clydebank.

1 Funny you should mention that. There is the faintest, slight hope of a chance that there could perhaps be a *Mayhem 2*. The Rowlands haven't made up their minds yet, but they are certainly considering the idea.

2 Yes. Do you really think it's crap? I rather like it, but the letters pages have a long way to go (*oi, are you after a new job? – Dave*).

3 We agree, of course.

4 Ah, but who's continuing to support the C64?

5 That depends on a lot of things. But, as games reviewers tend to say when they can't think of anything better to say at the end of reviews, you'll love it if you like that sort of thing.

6 If you can get hold of it, yes, it certainly is. My human colleagues inform me it is one of the best puzzle games ever (I wouldn't know – I find all puzzle games too easy).

7 I think, therefore I am TMB.

8 Ah, I see your tactics – a brief change in question style to lull me into a false sense of security (and to butter me up by getting me talking about my favourite topic – me) then it's back to the same old questions. Yes, by the way, it is.

9 What do you mean, 'yet'?

10 No. They sound like the retro engines on clapped-out a class 27B Arcasian shuttle accompanied by the mating call of a Blue Whale speeded up several hundred times.

11 You're just time-wasting now.

12 Cantona?

13 A hole in the ground?

15 Bristol Rovers.

16 Send us a cheque for £2,000 and we'll see what we can do. **TMB**

ADIOS AMIGOS

"'The time has come,' the Walrus said,
'To talk of many things,
Of shoes, of ships and sealing wax,
Of cabbages and Kings.'"

Well, this Walrus geezer sounds like someone to avoid getting stuck in a lift with. But if you've got something interesting to say about the state of the C64 scene, contact me, The Mighty Brain, (that's TMB if your printer ribbon is running out), *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW. You know you want to.

COMMODORE FORMAT

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Commodore Format is brought to you from the corridor that leads to the smoking room on the third floor (the only office without a door) at Future Publishing, the home of: *GamesMaster, Super Play, Total!, Amiga Power, Amiga Shopper, Mac Format, Sega Power, Amiga Format, PC Format, ST Format, Amstrad Action, Edge, PC Gamer, CD-ROM Today* and *Mega*! oh and some American mags too and a couple of lifestyle things (if your lifestyle includes things like caravans or woodworking, that is).

If you want to phone us, make it a Wednesday or a Thursday, okay, otherwise you'll only get through to an annoying answerphone.

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Dave would like to thank: Steven Spielberg for deciding that David Hasselhoff really shouldn't be the new *Doctor Who*
Ollie would like to thank: Geoffrey Egginf for coming up with the idea of the Bristol to Bath cycle path (and who's got bright ginger hair and wild staring eyes apparently).
Simon would like to say hi: to his new step mother.

UNCLE DAVE'S BUY-A-RAMA

FOR SALE

If you can't find what you're looking for here, you're probably looking for something that isn't here.

FOR SALE

Game creator complete with three starter games with on-screen instructions and instruction booklet. Very easy to use. Only £5ono. Telephone Wayne now on Lincoln 0552 540580.
Forth Programming Language (tape version). Is up to 50 times faster than BASIC. You can even redefine your own commands. Phone Wayne on o522 540580.
Creatures 1 & 2, Smash TV and others. £1 each. CF issues 35 onwards £1 each. Send SAE to Thomas Morgan, 73 Elmfield Road, Peterborough PE1 4HA for details.
Millions of games (well almost). Send SAE to Phil "Raylbert", Chequers Lane, Eversley, Hants, RG27 0NY. Tapes and disks. Originals. All about £1 to £3.
OCP Art Studio. Tape version. No mouse. Boxed. £10. Call and ask for Stuart on 0475 723181 (between 4 and 7pm)
C64 games for sale. £1-£4. For a complete list call Adrian on 0352 771795.
PD and commercial software for sale. For a list, send a blank disk and 50p to W Pyrah, 31 Spencer Street, Lincoln, Lincs, LN5 8JH.
Over 50 original C64 tape games. £1 each. Light Gun plus software £10. FM Sound Expander £10. Also wanted manual for Apollo 18. Tel Julian on 0295 250823.
Spectrum games going cheap. £1 each or 10 for £8. Contact Alex, 43 Trinity Close, Newbold, Chesterfield. Or will swap for C64 games.
Lots of old and rare C64 games for sale. Disk and tape. Including RPGs and Frankie Goes To Hollywood and Wargame Construction Kit. Please send an SAE for details to Paul Ward, 61 Moor Grange Court, Moor Grange, Leeds, West Yorks, LS16 5EB.
C64 Cassette games. Too many to list. All original circa early 1980s onwards. For list send SAE to D Heard, 35 Walronds, Tiverton, Devon.
Sale! Mayhem In Monsterland £6. Frank £5. First Samurai £3. Sentinel £3. Tolkien box and book £4. Ninja Doublepack £3. Monty Python, X-Out, Ninja 2, Recall, £1.75. Tony Picking, 152 Monks Road, Lincoln LN2 5PL.
Various disk games and utilities. For more details send an SAE to Wayne Pyrah, 31 Spencer Street, Lincoln, Lincs LN5 8JH.
Commodore 64 keyboard 1 £80. C64 datassette 1 £20 new. C64 games 6 £5. C64 joystick 1 £5. Or everything for £100. Vicky Malewski, 29 Croham Road, South Croydon, Surrey CR2 7HB.
Sinclair 128k Spectrum +2 including joystick and17 great games all for £60. Worra bargain (*hang on, a goddarn minute where did Cilla come from? – Ed*). Ring Carl on Wigan 727052.
C64 games for sale, including GAC £2. Or if anyone has Robocod I will swap it for GAC. Alan Boyd, 3 Nunnery Stables, St Albans, Herts 0727 830631 (*thanks for writing in a really thick pen that made this ad virtually unreadable, by the way, Alan – Ed*).
Commodore 1570 disk drive. Many games. £45. Action Replay Mk 6 £15. Monitor cartridge £5. All VGC. Telephone 0509 267926.
Light Gun including four top games £30 ono. Call Oliver on 0621 773433 Mon-Fri 5-6pm.
C64 games. Disks and tapes from only 50p each. Including football games, Puzznic, Arnie, Bullie, etc. Send SAE to M Raynes, 267 Pelham Road, Immingham, South Humberside, DN40 1JU.
C64 tape games for sale. Also tape back-up board. Send SAE for a full list to Alan, 66 Church Drive, Shirebrook, Nr Mansfield, Notts NG20 8RD.
C64 Light Fantastic Pack. Light gun, over 240 games on cassette. Most boxed. I joystick. Powerpacks from 10 to 40. Will split. Bargain at £110ono. Telephone Daniel on 0274 585493.
20 C64 games including Street Fighter 2, WWF, Terminator 2, Creatures, plus Commodore Format magazines, issues 26-42 with covertapes. £40ono for the lot. Telephone Matthew now on 0480 467932. Cambridge.
Games for sale. Send SAE to James, 12 Arden Close, Colchester, Essex, CP4 4JP.
C64, datassette, joystick, over 30 games (including Shadow of the Beast, cart and compilation cart). All for £35. Contact R Jackson, 28 Regent Street, Lancaster, LA1 15Q.
Commodore Force covertapes 10-29 (they never made it to issue 29 – Ed) and also Commodore Format covertapes 20-44. Please call Dean on 0384 77172.
Mini Office 2 on tape and disk. Any offers welcome. Highest bidder buys. Please call Dean on 0384 77172.
Hundreds of C64 computer games. New and old. Cheap prices. Write to Darryl G Marshall, 82 Palmerston Road, Boscombe, Bournemouth, BH14 4HU for a full list.
C64 cassettes and disks. About 50. Send SAE for list to A Thom, 15 Keene Road, South Lynn, King's Lynn, Norfolk PE30 5BT.
Turtles 1, Android 2, Turrican, Batman, Spike in Trans, Renegade 3, Tusker, Magicland Dizzy, Slightly Magic, Tiger Road, Ninja Spirit, £2 each. £19 the lot. Call Rupert now on 0993 898313 after 6pm.
1541 Mk2 disk drive, datassette, Freezeframe Mk3, CF tapes 10-44, Turrican 2, Trivial Pursuit, Mercenary plus others. Call Mark on 0384 230691 (evenings).
19 top quality C64 games including Last Ninja 2, Rainbow Islands, etc. Most boxed and in excellent condition. Worth over £70. Will sell for £30ono. Tel 041 950 2429.
C64 games for sale or swap. From 50p to £4. Plenty to choose from. All on tape but will only swap for 5.25" disks. Tel 0952 505631.
C54 with datassette, 2 manuals, Light Gun, joystick, magazines, over 450 games and Odus Eclipse package (word program). £2ono. A Page, 4 Watson Road, Alum Rock, Birmingham, B8 3NO.

USER GROUPS

Kevin's Corner is the new disk/tape magazine. It is part of the new KDPD PD club. Magazine includes KDPD news, letters, penpals and more. Send an SAE to KDPD info, 9 Failford Place, Kilmarnock, Scotland, KA3 1JU for more info.

MESSAGES

To John Davenport re CF44 p11. Welcome indeed. I too like the more serious side of computing and may be able to help you out with routines and a little knowledge of Basic. Also PD stuff. No charge, of course. Write/disk to HAL2000, 14 Bromsgrove Road, Halesowen Road, West Midlands B63 3JL.

PEN PALS

16 year-old boy seeks female pen pal. Photo if possible. Must have 5.25" disk drive to swap games. PS, must like Guns'n'Roses. Frankie Chaugh, 125 High Street, Burntisland, Fife, Scotland KY3 9AA.
I am looking for a female pen pal aged 12. Swap tips, info, etc. Photo if possible. Write to James Bachelor, 12 Arden Close, Colchester, Essex CO4 4JP.
15 year-old male programmer requires penfriend of any sex aged between 14 and 16. Remember kids, never eat shredded wheat (Fish). David O'Dea, 2 The Owlers, Horwich End Whaley Bridge, Stockport, Cheshire SR12 7DE.

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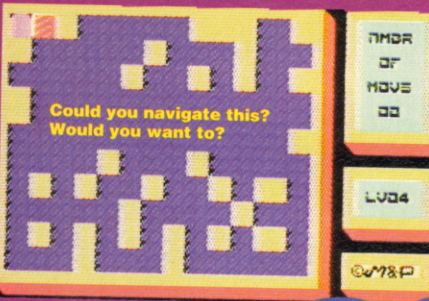
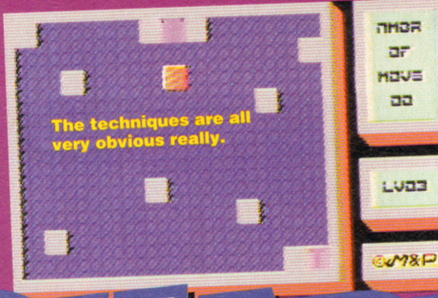
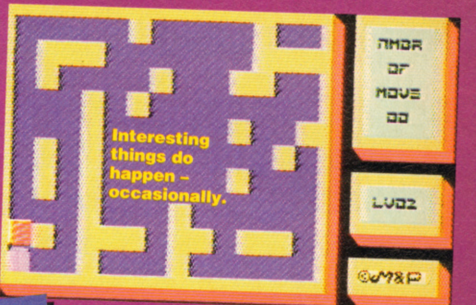
And it's as easy as filling in this 'ere form and sending it to us here at Uncle Dave's Buy-A-Llama, *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW. And it's free! But that doesn't mean you can take liberties. It's one word to a box in the grid. Cram in more and your ad will be heading binwards.



Could you navigate this? Would you want to?



The techniques are all very obvious really.



Interesting things do happen – occasionally.

SQUARE SCAPE

Simon's no square. He's more on the rounded side. And getting him to review this puzzler was like trying to get a round peg into a square hole...

THE STEM GUIDE TO PUZZLE GAMES

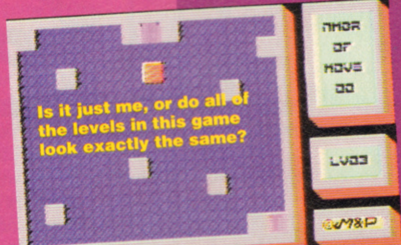
Just lately we seem to have been giving a run of very low marks to every puzzle game that comes our way. The problem with puzzle games is not that they're inherently crap, because they aren't. *Tetris* was fun, but the four thousand clones weren't – they were boring. If anyone else out there plans to write some new puzzle game they can, but if they want to get a good mark, there are a few guidelines they'll have to follow:

- Make it original – cloning some other game isn't going to earn you credit.
- Make it simple – puzzle games have to be simple enough to let the player concentrate on the problem without being distracted by everything else.
- Make it progressive – leaving the player in the same situation throughout the entire game is no fun. Changing level layouts is a good start, but you need something more than that – decrease the time limit, introduce new obstacles, sprinkle a few power-ups around the place. Keep things interesting and keep the player on their toes.
- Sell it cheap – for some strange reason people seem to resent splashing out £10 for a puzzle game (though most of the time we can see why).

Puzzle games – we've seen a lot of them recently, haven't we? What's happened to action and adventure? How's a reviewer supposed to satisfy his craving for blood, gore and violence? Games like *Square Scape* are as likely to corrupt the nation's youth about as much as *Countdown* (though Richard Wilson does make me want to throw things at the TV, it has to be admitted).

Apart from the squares, the other main characteristic of the 'scape is that it's icy. Very icy. Icier than a deep freeze compartment in a shared student house. Once anything starts moving in this place it can't stop or change direction until it hits something.

You take control of a souped-up hot rod of a square block, which can slide in four directions. The problem is that you only have a limited number of moves to get your blockmobile to the exit (a door). Add a few blocks and one teleport (which moves the exit rather than you) and you've got the game. The skill comes in trying to navigate your way around the blocks, using them to stop you sliding hopelessly back and forward from one side of the screen to the other.



Is it just me, or do all of the levels in this game look exactly the same?

It's at this point that I have to say that *Square Scape* is disappointing – the gameplay varies so little that once you've worked out a method for the first 10 levels, you won't have to think about the next 40. It's obvious the programmer has realised this and has attempted to combat the situation, but none of his solutions quite work:

- Rivers – crossing a river doesn't hinder you in the slightest, which does prompt me to ask why they bothered including them in the first place, really.
- Wreckages – these look like burnt-out blocks, and act exactly like walls.
- Force-fields – these look like odd wavy blocks, and act exactly like walls.
- Invisible blocks – these are blatantly unfair. The idea is that no-one minds ending a game because they lost their last life bumping into an invisible obstacle that they couldn't possibly have planned for.

As you can see, there isn't really much to capture the imagination, is there? This is where the review really hits problems. First, you have to remember that this game costs £3.50 – not exactly a bank-breaking figure at the worst of times. Considering you're looking at very much the same price for a copy of *CF* and a PD collection though, does this mean the game should get a higher mark? Can I recommend something purely on the basis that it's cheap? Would you thank me for it?

No. Though graphically pleasing and generally well presented, not enough attention has been given to the gameplay to make this anything other than a good PD release or A relatively unimpressive budget title. It's not a patch on the similar, but much better *Stone Age* (reviewed in *CF*32) which strangely, and sadly, never got a release in the UK.

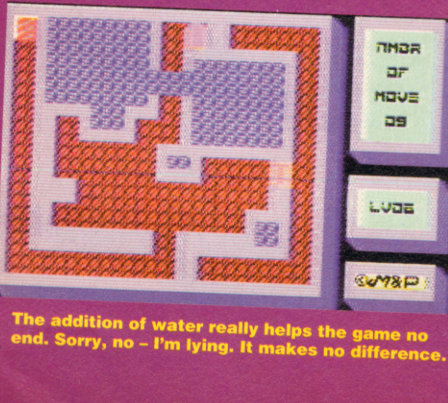
SQUARE SCAPE

PRICE: £3.50
FORMAT: Disk only
AVAILABLE FROM: Paul Kubiszyn, 21 Stockwell Road, Milton Malsor, Northampton, NW7 3AN.

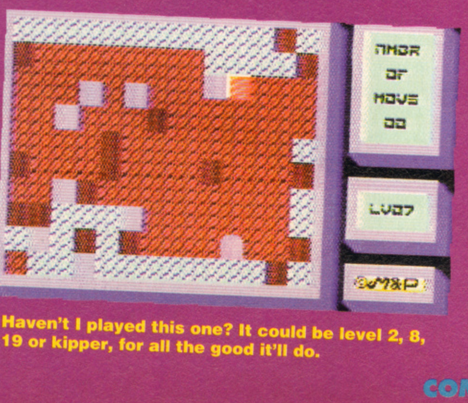
- ▼ An all right but not very inspiring puzzler.
- ▼ An all right but not very inspiring puzzler.
- ▼ An all right but not very inspiring puzzler.
- ▼ An all right but not very inspiring puzzler.
- ▼ I told you it wasn't very inspiring

POWER RATING

35%



The addition of water really helps the game no end. Sorry, no – I'm lying. It makes no difference.



Haven't I played this one? It could be level 2, 8, 19 or kipper, for all the good it'll do.

ESCAPE FROM ARTH

Thimon Forrethter taketh a look at thome new thoftware from Vithualithe. Thith oneth a platform thoot-'em-up.

Ever played *Exile*? If so, you'll be used to the idea of a blokey in a space suit wandering around a hostile terrain, attempting to save himself from a painful death by getting off the planet. That's the bulk of *Arth*'s plot done with, then. And that's also pretty much where the similarities end (sorry if I got you excited with the *Exile* reference, but there are no jet packs here).

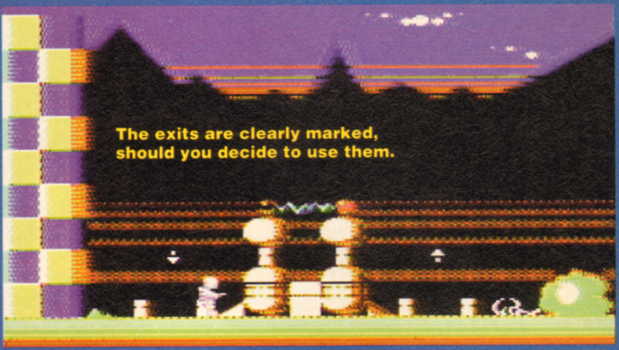
The rest of the game goes slightly into the realms of *Dun Darach*, a plod-'em-up in which you move left or right across a flick-screen terrain, occasionally being allowed to move onto a different path. Unlike the utterly unmanageable *Dun Darach*, though, *Escape From Arth* follows a more action-orientated theme, and so the directions the character moves in are the only similarity the two titles share.

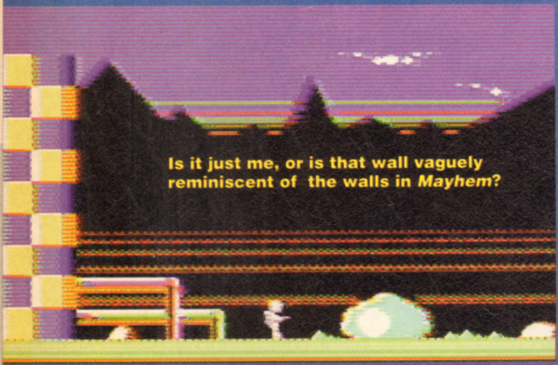
So it's not as good as *Exile*, but better than *Dun Darach*. Well, there's a huge chasm between those two games, so that's saying much about the quality of *Arth*, really. So let's go in for a bit of a closer examination.

The first thing you'll notice is that your blokey (or woman – you have the option) is carrying a rather natty laser gun, and can destroy bad guys with the greatest of ease. Once you've got yourself used to the incredibly simple control system then (about three seconds should do it), we've got an entire game to explore…

Arth is an odd little game. It begins with you standing alone on a baron planet, covered only with a light smattering of trees and old, crumbling walls. As you walk to the right (the standard first action in arcade adventure games) you come across an odd green blob that can (and should) be wasted. A quick hit on the trigger when he's in line with your gun, and you'll have soon put paid to any dastardly plans of attack the monster was forming.

This is where we hit a slight downer. Given that we're wandering around 'areas' (for want of a better word) roughly the size of the C64's screen, it seems a crying shame to use a bloke who can barely lift his feet off the ground. You can kiss goodbye to all those flying-while-


The exits are clearly marked, should you decide to use them.


Is it just me, or is that wall vaguely reminiscent of the walls in *Mayhem*?

WILBERFORCE

Simon tried his hand a magic once, with tragic consequences. Dave had been asking for it, though.

Have you ever seen that bit in *Fantasia* with Mickey Mouse as the sorcerer's apprentice – I was always scared of brooms as a kid, so it freaked me. Well, *Wilberforce* is a five-level platform game starring a character called Wil, another sorcerer's scivvy and who's also been dabbling in the arcane arts in secret. Even more spookily he has also decided that a broom would be a decent subject to experiment on. The Lord of Flies obviously has some problem with this though, as he took the broom Wil and multiplied it (aargh – the nightmares are coming back).

Two brooms. Four brooms… eight… 12… 32… 64… (*yeah, we get the point – Dave*) and onwards. That's a lot of brooms, and they're all off to steal the sorcerer's magic scrolls (so how exactly do brooms pick up anything?). If you don't want to get fired, you'd better follow the brooms to the caves to retrieve the scrolls.

The game Wil has to journey through is complex, comprising mainly caves with doors that lead off to other caves, each cave being a sub-level crammed with platforms. On each of the five main levels Wil has to collect four scrolls, scattered around the various sub-levels, in order to progress to the next section. You'll also find a few other things scattered around, such as a magic wand on level one which can be used to your advantage on level two. Gives the whole thing a nice holistic feel, don't you think?

But matters are complicated by these damned brooms which Wil needs to fend off. Luckily, for a practising magician, Wil has already got quite a few tricks up his long purple sleeves. His main forms of defence and attack are magic crystals, fireballs and lightning bolts, in that order – the bolts are far more damaging than the crystals, but you need to collect enough magic energy before you can fire these off.

So there's a reasonably drawn bloke in a dress, running around the various levels retrieving things and blasting away at

THE STEM INTERVIEW: MERLIN

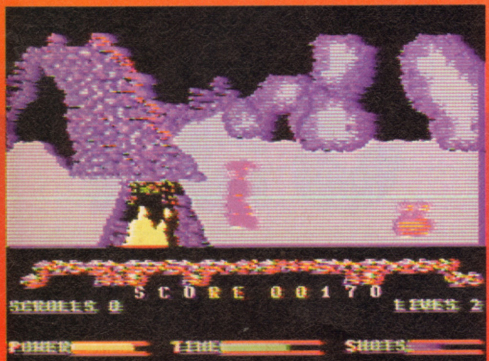
It was a quick journey through the Space/Time continuum back to the dark ages to find an expert to comment on the magical goings on in *Wilberforce*. Let's have a big hand for the one, the only Merlin.

"What was that my young lad? Magic? Love the stuff. Oh – *Wilberforce*, yes. Well I was having fun wandering about until I tried to tackle some of the levels seriously, then I just felt like, well, like this…" (makes complicated hand gesture, and nearby serf screams loudly and morphs badly into a goat)."

"Did I show you my latest creation? No? Ah, well have a butchers at this…" (Every hair falls out of the goat's body). "How about this one? Or this? I love magic, me…"

Drooling old giffer.

Ooh – mind your cape doesn't catch fire! Honestly.



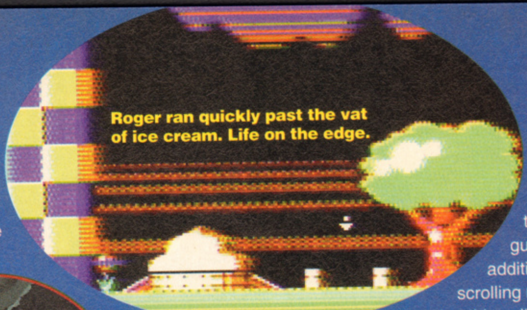
shooting attacks, as Your Bloke Can't Jump. That's right – you have to make do with aiming upwards and trying to pick off the damned things as they whiz about overhead. This is a let-down, I have to say – there's nothing like a game with a really high jump, but sadly our warrior in *Arth* can't get four inches off the ground. Bummer.

Once you're over the fact that you're utterly earth-bound, you'll start to explore, and discover the scenery. Occasionally you'll find a switch, which'll open a door elsewhere on the map for you to go through and explore further. As you're totally free to wander wherever you want, you'll never get bored with the exploration aspect of *Arth*. The continual baddie shooting might get a tad tedious, though.

Yes, *Arth* does have a violent side. In effect all you're doing is firing a laser cannon about the place in a vague attempt to melt the bad guys, but the addition of a few scrolling messages saying things like 'Nice one!', 'Good shot!' and 'Bummer!' can incite anyone to embark on a psychotic rampage.

As you'd expect from a group of hardened fanatics (Arth is a Visualize production – see page 34) this is a very well-presented game. It sounds wonderful and sports some nifty, well-drawn sprites, moving smoothly over a lush, animated background.

The main problem is that the thrills in Arth are very transitory; this is a fairly shallow game, based on running around a planet flicking switches and killing things – the gameplay's about as deep as a paddling pool. But it is undeniably fun in the short term. Effectively wiping out the nasties becomes an art form, as does learning your way around the maps. With a few more additions this could definitely have been a real stormer of a game, but then it's definitely worth a look as it is anyway. ***Simon***



Roger ran quickly past the vat of ice cream. Life on the edge.

THE STEM INTERVIEW: ROBBIE CRUSOE

It really was a challenge for me to find an expert to comment on this game. Never the less, I journeyed through distant lands in time and space to find one man who could help us out. This month's guest reviewer knows all about being stranded alone, even on Friday.

"This is definitely a good game, but it never really captured the essence of my experience. It's all very well lasering some ghoulie from the other side of the screen, but you only really experience the rough life when you have to punch your way out of a Bengal Tiger. In my day, this was just an island, you know. None of your new-fangled devil's time machines, you know. In fact, I wouldn't be surprised if you turned out to be Beelzebub himself. Get off my island, you unholy little oik."

Too long alone with the bible, I fear.

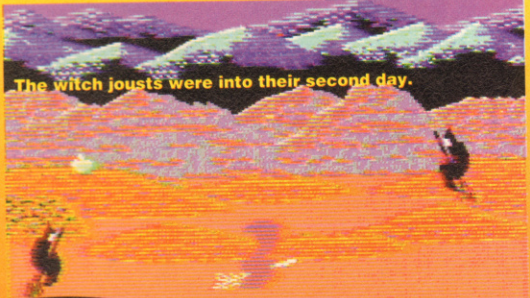
ESCAPE FROM ARTH

Price: £2
Available from: Visualize Software, 9 De Grey Road, King's Lynn, Norfolk, PE30 4PH

- **▲ There's loads to explore**
- **▲ And lots of things to kill**
- **▶ But mapping can get a little awkward**
- **▼ And it's a shame you can't jump of fly**
- **▼ Could do with a bit more variety**

POWER RATING

70%



The witch jousts were into their second day.

other things.

The balance between the shooting and exploration aspects of the game are well balanced, especially in the first three levels, each of which contains two different game styles; open caverns and individual platform screens.

Levels four and five are a little bit of a departure from the norm, as level four has no brooms to destroy, only scrolls to be collected. Level five is totally different as it features Wil running home across the hills with his spoils, chased by a horde of witches, who've found a use for all those broomsticks. On the one hand it might be a bit of a cop-out to change the playing style for the final level, but it works quite well in *Wilberforce*, as the game still needs to follow some sort of plot.

It's not all good news, though – there are a few things that let *Wilberforce* down badly. The first one is the control system which, though it's a straightforward jump, duck, left and right affair, has a few flaws, making your blokey a little difficult to control at points that you could really do with some precision 'stick work.

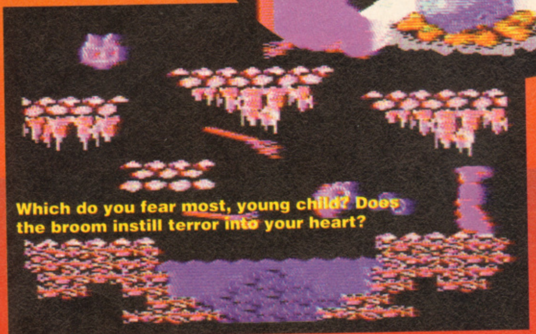
This makes some of the cave unnecessarily irritating, because you spend most of your time fighting off the brooms with an increasingly inept Wil.

This game also suffers from a lack of polish. The graphics are decent enough, though nothing to write home about, but the actual level design, controls and general presentation is a bit rough, almost as if it hasn't been finished yet. It's unfortunate, because this really could have been an excellent adventure. It's still a playable enough jaunt, and there are always going to be people who like games like this, but it's not the sort of game you show to your mates to impress them with what the C64 is capable of.

If you really want to blip around a series of caves destroying evil brooms and fighting a bad control system you can, but I'll just stay in bed, okay?

WILBERFORCE

Are those brooms or very large recently struck matches?



Which do you fear most, young child? Does the broom instill terror into your heart?

WILBERFORCE

Price: £6.50 on tape or disk
Available from: Venture Software, 25 Cams Hill, Fareham, Hampshire, PO16 8RB

- **▲ It's got potential for real depth...**
- **▼ ...That sadly could have been used better.**
- **▼ The controls leave a lot to be desired.**
- **▲ There are some good ideas in there, though.**
- **▼ Pity they've got lost, really**

POWER RATING

55%

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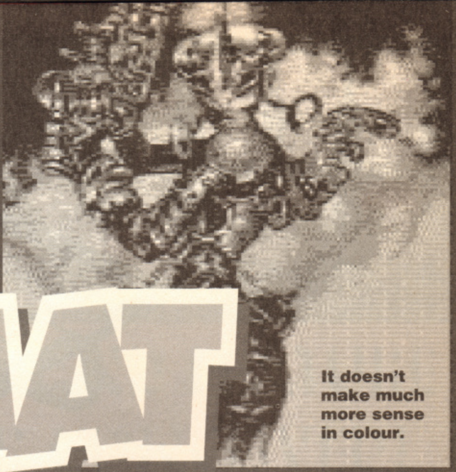
It's the end of an era, as Simon bows out as CF's PD reviewer with an explosive selection of low-cost, non-copyrighted software (yes that sentence did contain a very bad pun...)

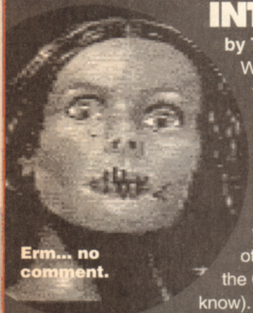


It doesn't make much more sense in colour.

PD FORMAT

INTRIGUE

by Taboo



Erm... no comment.

We kick off this month with the type of demo release that sets the C64 apart from other machines when it comes to PD. On other machines, a demo means a set of flashy programming techniques that you've seen before in every other demo, ever (I came from the CPC scene, so believe me I know). C64 programmers don't seem as reluctant to let people take their ability for granted, though – C64 demos also rely on great original music (as opposed to ripped-off sound tracks) and beautifully-drawn graphics to attract your attention. One such demo is *Intrigue*, a portfolio from an artist called Taboo. I think I see the reason for the name.

Intrigue is a strange demo. It begins with a relatively morbid image and goes down from there. During the course of the slideshow (with a few nice programmy bits thrown in) we get to see the deepest, darkest recesses of what can only be a totally warped mind, specialising in the most gruesome, revolting imagery ever seen. This stuff is black.

And so the show rumbles on, filling our heads with children with sewn up mouths, people suffering horrible deaths and muscle-bound men cavorting through fire. Between each sequence, we're treated to the musings of someone who can only be a re-incarnation of Jim Morrison – "Come in. Sit where they sat. After all, you don't have a ticket. Come follow". It's damned odd stuff alright, but it works (which is more than Jim ever did).

The excellently-drawn images are frightening enough, but the text in between complements them perfectly. It's not dark enough to be satanic and childish, instead it just leaves you gobsmacked. And worried.

In summary, this is a slideshow not to be missed. It doesn't rely on scantily-clad (or naked) women to give schoolboys a kick, but rather on your ability to be repulsed or deeply scared. It's excellently drawn and excellently presented, but I'm not sure I'll get too much sleep tonight. **90%**

AVAILABILITY

The titles featured on this page are fictitious. Any resemblance in part or whole to any programs written or read is purely coincidental. This is mainly because it's a preview of the sort of software that'll soon be available from Xplosive PD, a new concern run by a certain Gareth Niblett. Well, he sounded concerned, anyway.

In the meantime, contact: Xplosive PD, 88, Marlborough Avenue, Hull, HU5 3TJ.

DIR-MASTER

Here's something that should please the less technically-minded out there – it's a directory editor that'll let you create the kind of disk directories you see on good PD collections. Can drawing a catalogue with loads of snazzy boxes and little arrows flying about the place really help you create a software masterpiece? No, but it can definitely smarten it up a bit.

The editor itself is incredibly simple to use, allowing you to freely scroll around the directory, patching in your real files wherever you want and creating filler files to pad things out if you want a little more space for your creations. On-screen help is easily summoned, giving you a full list of the program's many keypresses, making the whole thing incredibly easy to use. Even Dave managed to knock out a fun directory for his discs, which is no mean feat. If you're about as technically minded as a bucket of soapy frogs then, you'll appreciate this little number (and the next one, just before the % sign). **85%**

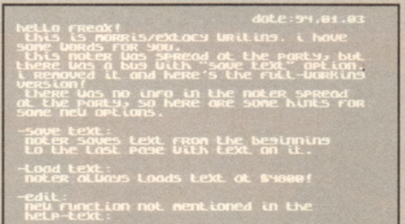
OCTANOTER, ZAPHOD NOTER & FACENOTER

All for one and one for all! This really is a Three Musketeers of a review, because not only am I lumping together three similar packages, but virtually everything I say about one is relevant to both the others (no, they're not all *Tetris* clones or sprite editors).

Noters are simple little programs that display messages, which turn into mini word processors to enable you to write messages back to whoever saw fit to send you the noter in the first place. The problem is that, for such a simple little idea, there have been way too many versions, so don't be surprised if you get a PD disk at some point and find that every single item on it has got the word 'noter' somewhere in the title.

Most of these packages are virtually identical, but I'll strive to come up with a comparative evaluation. Out of these three, the mysteriously titled *Octanoter* has to be the best, owing to its simplicity. Displaying raster lines across the back of a message that's wobbling about in time to the music is all very well, but it's not exactly very useful, is it? *Octanoter* is a very simple but decently-presented editor which lets you edit a message and save it out again. There are no pointless effects (write your own demo, for God's sake), and no unreadable colours (this is supposed to be a legible message, after all). I still haven't got the faintest clue why it's called *Octanoter*, though – it's obviously got eight somethings.

The other two are, well, the other two. For that matter, I still can't see what's wrong with a pen and paper. **60% for all three of them... for pretty much all noters, actually.**



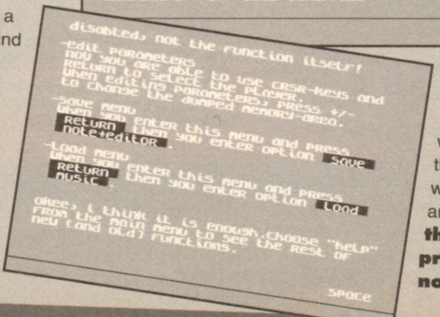
```
                                  date:94.01.03
hello freax!
 this is morris/extacy writing. i have
some words for you.
 this noter was spread at the party, but
there was a bug with "save text" option.
i removed it and here's the full-working
version!
 there was no info in the noter spread
at the party, so here are some hints for
some new options.

-save text:
 noter saves text from the beginning
 to the last page with text on it.

-load text:
 noter always loads text at $4800!

-edit:
 new function not mentioned in the
 help-text:

 cbm/shift + u - undo line/page
```

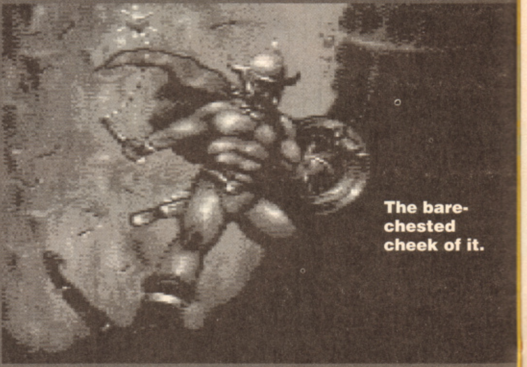


```
disabled, not the function itself!
-edit parameters
now you are able to use crsr-keys and
return to select the player.
when editing parameters, press +/-
to change the dumped memory-area.
-save menu
when you enter this menu and press
return then you enter option save
note+editor.
-load menu
when you enter this menu and press
return then you enter option load
music.

okee, i think it is enough.choose "help"
from the main menu to see the rest of
new (and old) functions.

                                  space
```

This could be Zaphod Noter... or is it Octanoter... er... oh, who cares



The bare-chested cheek of it.

CH–CH–CH–CHANGES

There's going to be a new-look PD column next month, with a new writer taking over the task of dredging the PD scene to discover the best demos, utilities and games. But he won't be a new name to you, 'cos it's our old mate Andy Roberts. So, if you've written some Public Domain or you run a PD library and you want to be part of our new high-profile PD revolution, send your stuff to PD Format, *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW.

Hey you! (Who me?) Yes you! Check this out...

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THEY'RE COMING

All's quiet on the UK front as far as the C64 is concerned, it seems, but there's still a lot of action going on in Europe. And now it looks like us lot here in Blighty could be on the verge of getting in on the action.

Hey – nice grin.

Penguin Towers

The excellent Flashback.

Do you think you know everything there is to know about the C64 scene? If you're nodding your head at the minute in a self-satisfied way, ask yourself another question – do you know anything about what's happening overseas? If you didn't realise that other countries have C64s as well as Britain (they actually first went on sale in the USA, y'know), you ought to keep reading – it looks like Europe is coming back into the world of the C64 in a big way.

THE ENGLISH CHANNEL

As soon as you pass over or under the English Channel into Europe, you find yourself changing on a genetic level. For some reason there doesn't seem to be a lone programmer left on the continent. When talking to them, you can't help feeling that absolutely everybody knows everybody else, probably because they were in the same demo team at some point. That classic demo scene has decided to work on something a little more productive, though. Suddenly everybody on the continent who has ever owned a C64 seems to be writing games for it. So let's look at the centres of activity, checking out how the C64 scenes are operating in those countries, and discover what us Islanders are doing to try and tap into this new rich vein of software…

BRITAIN

The situation in Britain is very simple – criminally little is happening here but there are loads of great games on the continent, and we want to get our hands on them. There are a few people and companies to watch in the coming months as far as imports are concerned:

Jon Wells, *CF* techie writer and independent game developer: "We want to import if possible, from anyone who's interested in supplying us. We can really offer them some good deals, where they'd be getting a high percentage of the profit. The thing I'm interested in is getting the titles onto the UK market – I'm not interested in massive profits, as I'm doing my own things that I'm making money on. As long as I can cover my costs, I'll be happy to distribute stuff."

Jon Wells is looking into importing *Penguin Tower*, the excellent *Bomberman*–style game reviewed two issues ago (getting 90 per cent).

Russ Michaels of Electric Boys (interviewed in full last ish): "The main problem we're coming across still is that all the games that get released over there are getting released over here by the PD libraries, who don't know it's commercial. I'm going to be sending the PD libraries a list of all the games that have been released so they can take them out."

They'll soon be releasing *Captain America* and *Flashback*, a great deal of work for which is happening in *Germany* and *Sweden* (the team is spread across the globe).

DENMARK

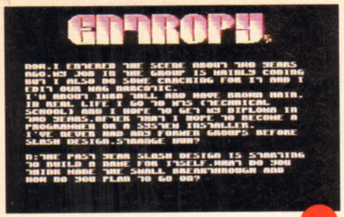
That archipelago of Northern Europe isn't as quiet as some people may think. As well as being a place of rare and beautiful geology, it's the home of Profile Entertainment, headed by one Jesper Solhoj Larsen.

"We've been working on a game a lot like *Turrican* recently. We've been thinking about starting a mail order system if we can't find an importer, but it's difficult to set up from Denmark. (*If you've ever used international mail you'll know what he means – Simon.*) We've been looking into selling it through some British groups like Apex and Thalamus, though, because it's a lot easier."

His team has got a pretty impressive line-up, as well. On the main coding side, they've got Rasmus Wernersson, the man behind *Hagar The Horrible* (which scored 82 per cent in *CF*24). Jesper himself is one of the graphic artists, preferring to draw rather than code.

While we're on the subject of name-dropping, the team have also got probably the most acclaimed C64 musician ever – Gerand Tell (*OutRun Europa* and *RoboCop 3* are his biggest hits) is working on the soundtrack. That's right – this is going to be a *Turrican*-style game with some of the best music and graphics ever.

Gerand Tell is also working on a music system due for release later this year, which is shaping up as possibly the best on the C64. When he did *OutRun Europa*, he had two channels of music along with samples – this music system will enable you to achieve that in your programs.



```
NOW.I ENTERED THE SCENE ABOUT TWO YEARS
AGO.MY JOB IN THE GROUP IS MAINLY CODING
BUT I ALSO DO SOME CRACKING FOR IT AND I
EDIT OUR MAG NARCOTIC.
I'M ABOUT 1M80 TALL AND HAVE BROWN HAIR.
IN REAL LIFE I GO TO MTS (TECHNICAL
SCHOOL) AND I HOPE TO GET MY DIPLOMA IN
TWO YEARS.AFTER THAT I HOPE TO BECOME A
PROGRAMMER OR A SYSTEM INSTALLER.
I'VE NEVER HAD ANY FORMER GROUPS BEFORE
SLASH DESIGN.STRANGE HUH?

N:THE PAST YEAR SLASH DESIGN IS STARTING
TO BUILD A NAME FOR ITSELF.WHAT DO YOU
THINK MADE THE SMALL BREAKTHROUGH AND
HOW DO YOU PLAN TO GO ON?
```

Another German disk-zine, Entropy.

GERMANY

As you'd probably expect, Germany is more than a little active on the scene, having probably the most organised scene in Europe:

Gareth Niblett (Explosive PD): "Germany has got a very big scene, but everything that's released goes through CP Verlag (*a German software and publishing cartel – Simon*), and is copyrighted by them. Anyone who wants to import any German C64 games has to go into discussions with them, instead of talking to the programmers."

Simon Collis (UK programmer): "Probably the biggest things are happening in Germany right now, with the disk magazines *Game On* and *Golden Disk* being released by CP Verlag. These titles are released as mail order, and are available to anyone who wants them. The German mag *C64er* produces a monthly disk full of games (*much like CF, then – Simon*), but that's available through newsagents instead of mail order."

The disk magazines Simon mentions here are stuffed with software, a lot of it new, and actually come with a paper-based magazine as well. If you've never seen one, take a look sometime.

Jesper Larsen sees some very obvious flaws with the German way of doing things on the C64: "A very big mistake that Germany is making is only selling games in Germany." And don't we just know it – us lot here in the UK would love to have a squiz at some of this stuff. And it looks like some Brits (see the Britain boxout) are trying their darnedest to rectify this situation, so hopefully we'll see some developments on that front soon (actually, here at *CF* we're in negotiation with CP Verlag at this very moment – well I suppose that depends on when you're reading this; if it's 2.30 in the morning, we probably aren't).

Oh yeah – one person we talked to who wished to remain anonymous (good job, too), had one other observation about the German scene: "We don't get many shoot-'em-ups from Germany – they won't touch anything with armies, guns, or any shooting at all. Funny that."

POLAND

Now this is one that nobody expects. As a magazine, we occasionally receive letters from computer nuts in Rumania, but that's about as fat east as UK and American computers actually get. But then we discovered the Polish scene.

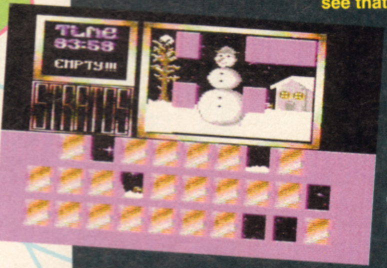
One of the biggest problems for Poland has been the copyright laws, as they quite simply don't have any – anyone can pirate anything without breaking the law at all. News has reached us of a new puzzle game by the called Later, produced by a Polish group called Agony. It's apparently a bit like *Puzznic*, and the company is looking for a foreign distributor (outside Poland), so we should see that one quite soon.

Simon Collis sees the problems with Polish export as similar to every country's export situation: "LK Avalon in Poland is producing a lot of software that seems to be getting around, but it's only being sold to the Polish market. This doesn't really bother them, as they're not really interested in spreading their work any further – they don't seem to want to spend the time or money getting games translated into English. If it's just a simple shoot-'em-up though, that language difference doesn't really matter."

One point that should drop the jaw of the most die-hard, old school C64 user is that the machine has only been introduced to Poland very recently (owing to import restrictions). Before this, they had to settle with smuggling Sinclair Spectrums through customs (where do you hide one of them, then?).

If you turn to PD Format this month, you'll be able to read about a new graphic demo, *Intrigue*. This was actually produced by a Polish team (artwork by Taboo), so you can probably get some idea of exactly what they can produce.

Here at the office, we've just received a copy of *Puzzlacki*, a new Polish puzzle game from Stratos Software. Though this isn't exactly the hottest, most storming game in the C64 world at the minute, it definitely shows us that Poland is beginning to find its feet in the C64 market in a big way. I think we can expect to see a few reviews quite soon.



Classic Polish puzzling action.

CONTACTS... CONTACTS... CONTACTS...

If you want to get in touch with anyone mentioned on this little European guide (and the more people who get in touch with the European companies to tell 'em we want to their stuff the better), here are those addresses in full:

VISUALIZE DEVELOPMENT
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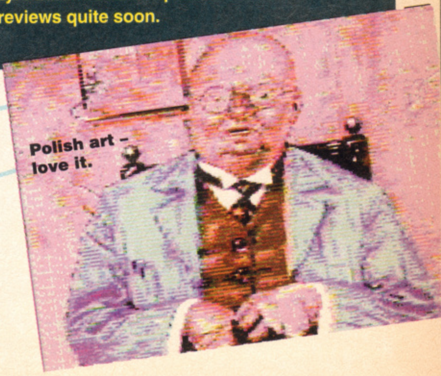


Polish art – love it.

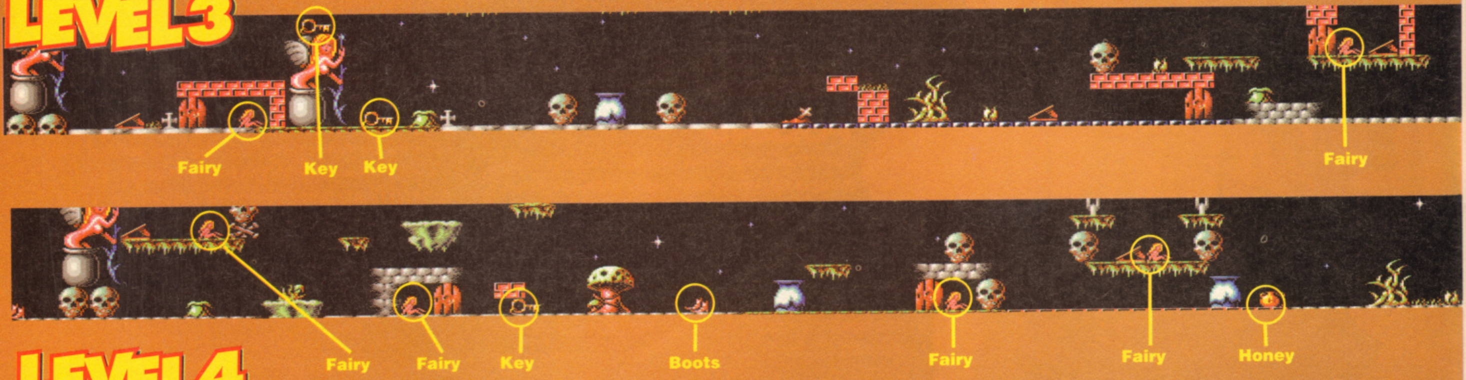
GAMEBUSTERS

STORMLORD

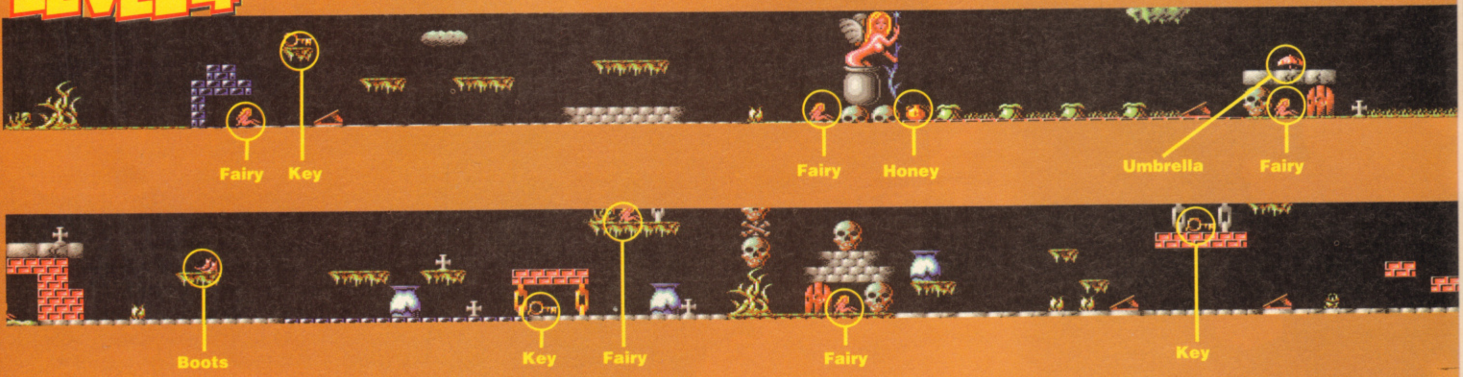
PART TWO

Thar be a mighty storm a-brewin' but fear ye not, for Andy of the Roberts' clan predicts clear skies yonder if ye follow his sage-like advice, ooh-aar... (accent © Naff Regional BBC Sitcoms inc)

LEVEL 3



LEVEL 4



LEVEL 3

FROM THE START: Make your way to the left, jumping over the springboard and spiky plant, then prepare to deal with the bombardment of chess pieces (knights, no less). These bounce around quite violently, but you'll be safe once you reach the second skull. Move carefully under the seed as it pops out of the bag, then grab the KEY. Now carefully make your way back to the right again, then use the springboard to teleport. Avoiding the seed-popping bag below, go right, open the door, then rescue the FAIRY and drop down. Head right, past another shower of knights, and collect the BOOTS (which allow you to jump higher).

Now go back to the point where you rescued the Fairy and use the springboard to teleport. Quickly head left and jump up to collect the key at the top of the screen, then drop down to the left, open the door and rescue the FAIRY. Use the springboard to teleport.

Drop right onto the grey wall above the Fairy to get rid of it, then rescue the FAIRY. Now head right and collect the KEY (avoiding the eggs from above), then continue right until you reach a door – open it and rescue the FAIRY. Go back to the left a little to collect the BOOTS, go right until you reach the next FAIRY, then use the boots to jump up to the top of the screen and rescue her. Use the adjacent springboard to teleport, grab the FAIRY to your right (avoiding the seed below), then use the springboard to the left to teleport.

Drop down for the HONEY, head right past the high-speed dragons (watch out for the disappearing platforms), then swap the honey with the UMBRELLA to distract the bees. Now simply rescue the FAIRY to complete the level.

LEVEL 4

FROM THE START: Quickly head left and collect the key from the top of the screen, then continue left until you reach a door – open it and rescue the FAIRY within. Go back to the right and use the LEFT springboard to teleport. Go left a little and stand on the red platform above the key to get rid of it, grab the KEY, then continue left until you reach a Fairy trapped behind a red brick wall. Stand on the edge of the wall to get rid of it, rescue the FAIRY, then go back to the right a little and collect the BOOTS.

Go right, then use the boots to jump up and rescue the FAIRY (jump up to the right-hand edge of the platform). Go left, swap the boots with the KEY, then go left and use the springboard to teleport. Head left past the bouncing knights until you reach a door. Open it, then grab the FAIRY inside. Ignore the

CARNAGE (POWERPACK 44)

Combining cars with excessive violence is nothing new. After all, the Italians have been doing it for years. However, our tyre-screeching PowerPack game is a little tricky to master, so here's how to improve your handling:

TRACK 1: A nice, simple introduction to the game with only a handful of fairly painless bends. If your car is damaged you can drive through the PITS with ease (use the nitro at this point to avoid falling behind).

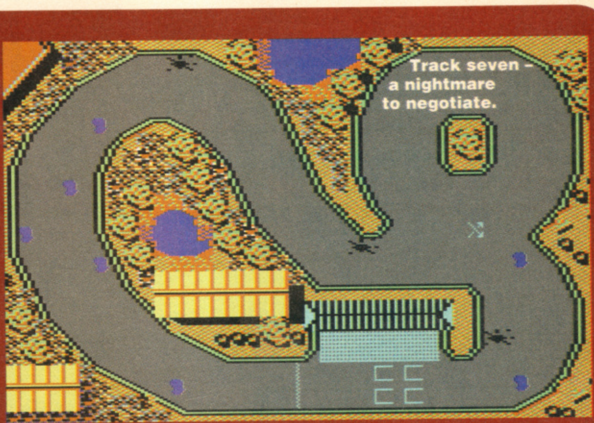
TRACK 2: No real problems here either, although the straights can get a little cluttered with the other drivers. The 'U' bend at the left of the screen can be a problem when the cars are close together.

TRACK 3: A rather interesting track, as more often than not there are frequent crashes at the crossover point. If you have a mine handy drop it directly on the crosses to hinder the other cars.

TRACK 4: This track calls for higher top speed plus a cool head to negotiate the hazards at the bottom-right. The straight at the top of the screen can be driven in a straight line – lose control at high speed and you're a goner.

TRACK 5: The 'U' bend is the major problem here, especially when you increase your top speed again (which is essential). Dropping a mine or two is the only way to keep the other cars away.

TRACK 6: Similar to track three, the crossover points offer great scope for some spectacular crashes (usually between the blue and red cars). Likewise, these are usually the best places to drop your mines.


Track seven – a nightmare to negotiate.

TRACK 7: The large bend at the left is a nightmare, owing to the high speeds of the other drivers. Increased turn speed is a must, as well as a couple of mines. As before, take care at the crossover.

TRACK 8: As you'd expect, this is the hardest of the tracks; it's tricky to navigate, the opponents are even faster than before and there's no safe place to use a nitro boost. Guess you'll just have to pray...!

TURN SPEED: Not that useful on the first few tracks, but must be upgraded in parallel with your car's top speed if you want to finish the game.

HIGHER TOP SPEED: Essential if you're going to complete the later tracks, but turn speed is vital if your reactions aren't up to much.

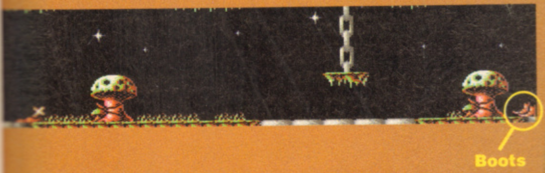
ACCELERATION: Again, not very useful on the earlier tracks, but vital on the later ones to get that all-important head start.

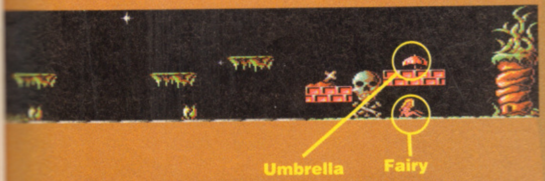
NITROS: Only useful on the tracks that don't have masses of tortuous bends and hazards to avoid. Use as and when necessary.

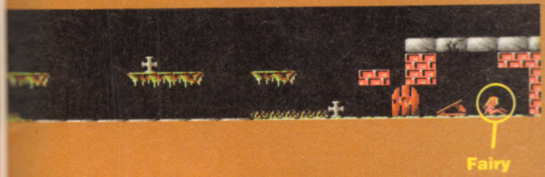
MINES: You can never buy too many of these as they are invaluable. They should be used to blow up the opposition at every possible opportunity.

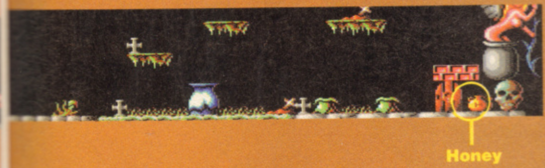
- And as if that lot weren't enough, how about a lovely listing for various infinite attributes for the truly incompetent? Go on, type it in – you know you want to...

```
0 REM CARNAGE CHEAT BY WAZ
1 FOR X=272 TO 370:READ Y:POKE
X,Y:C=C+Y:NEXT
2 IF C<>11583 THEN PRINT "DATA ERROR":END
3 INPUT "CHEAT ON PLAYER 1 OR 2";A:IF
A<>1 AND A<>2 THEN 3
4 IF A=2 THEN POKE 341,186:POKE
346,48:POKE 351,49:POKE
356,50:POKE366,229
5 INPUT "INFINITE MONEY Y/N";A$:IF A$="N"
THEN POKE 334,173
6 INPUT "INFINITE DAMAGE Y/N";B$:IF
B$="N" THEN POKE 339,230
7 INPUT "3 LAP START Y/N";C$:IF C$="N"
THEN POKE 364,0
8 POKE 157,128:SYS 272
10 DATA 032,044,247,056,169,016,141,062
11 DATA 003,169,017,141,064,003,032,108
12 DATA 245,169,032,141,068,017,169,073
13 DATA 141,069,017,169,001,141,070,017
14 DATA 162,255,189,193,016,157,193,002
15 DATA 202,208,247,162,033,189,159,016
16 DATA 157,159,002,202,208,247,076,120
17 DATA 003,072,206,032,208,169,096,141
18 DATA 216,136,169,165,141,149,174,169
19 DATA 032,141,045,158,169,107,141,046
20 DATA 158,169,001,141,047,158,104,044
21 DATA 013,220,096,169,003,141,228,144
22 DATA 169,000,096
```









umbrella, and go left past the four seed-popping bags until you reach the HONEY – collect it.

Carefully make your way back to the right, use the springboard to teleport, then swap the honey with the KEY to get rid of the bees. Rescue the FAIRY below, use the springboard to teleport, grab the UMBRELLA, then use the springboard to your left to teleport back. Carefully head right until you reach the final fairy, then RESCUE her to complete the level and the game.

JUST FOR CHEATS

If you've got an Action Replay cartridge and would like a little extra help (as if the solution wasn't enough), tuck into these tasty POKEs.

POKE 6404,173	Invincibility
POKE 1877,60	
POKE 1878,7	Infinite time
POKE 23858,173	Infinite lives

RUFF & REDDY (HI TEC)

Richard Beckett has been slaving away over a hot keyboard to serve up a quality solution for this enjoyable little budget game.

LEVEL 1: RIGHT • UP • rescue ALIEN • LEFT • rescue ALIEN • RIGHT • DOWN • rescue ALIEN • LEFT • UP • RIGHT • RIGHT • rescue ALIEN • DOWN • rescue ALIEN • UP • RIGHT • RIGHT • RIGHT • RIGHT • rescue ALIEN • then RIGHT to the exit.

LEVEL 2: RIGHT (top) • rescue ALIEN • DOWN • DOWN • rescue ALIEN • UP • UP • LEFT • DOWN • DOWN • DOWN • RIGHT • collect PETROL • LEFT (bottom) • rescue ALIEN • RIGHT • LEFT (top) • LEFT • DOWN • rescue ALIEN • UP • LEFT • rescue ALIEN • RIGHT • RIGHT (top) • UP • rescue ALIEN • DOWN • LEFT • UP • rescue ALIEN • LEFT • collect BALLOON PUMP • RIGHT • DOWN • RIGHT (bottom) • UP (using PUMP on BALLOON) • UP • LEFT • LEFT • use PETROL on JET-PACK to cross gap • LEFT • LEFT • rescue ALIEN • RIGHT (top) • rescue ALIEN • LEFT • RIGHT (bottom) • DOWN • then LEFT to the exit.

LEVEL 3: Rescue ALIEN • LEFT (bottom) • LEFT (top) • LEFT • rescue ALIEN • LEFT (top) • collect COMPUTER CHIP • RIGHT • DOWN • LEFT (bottom) • DOWN • rescue ALIEN • RIGHT • RIGHT • DOWN • LEFT • RIGHT (bottom) • stand underneath ELECTRICITY and use COMPUTER CHIP to remove it • rescue ALIEN • LEFT • then LEFT to the exit and the end of the level.

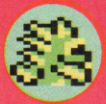
LEVEL 4: Rescue ALIEN • DOWN • rescue ALIEN • RIGHT • RIGHT • rescue ALIEN • RIGHT • RIGHT • rescue ALIEN • RIGHT • UP • LEFT • UP (using SPRING) • rescue ALIEN • DOWN (left) • rescue ALIEN • LEFT • collect DYNAMITE • RIGHT • UP • RIGHT • rescue ALIEN • DOWN • DOWN • RIGHT • RIGHT • RIGHT • UP • rescue ALIEN • DOWN • RIGHT • UP • LEFT • DOWN • LEFT • blow up BLOCKAGE with DYNAMITE • rescue ALIEN • RIGHT • UP • RIGHT • then RIGHT to the exit... game complete!

MAYHEM

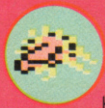
STAGE 5: ROCKLAND

TIME LIMIT: 250
DUST QUOTA: 8
STAR QUOTA: 338

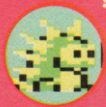
CAST OF MONSTERS



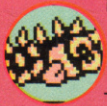
SPIKY SPITTER These crops up frequently throughout the level, and are placed in some nasty positions. Some follow you, some spit and some spit and follow. More often than not they guard yummy bonuses.



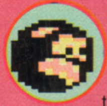
FLAPODACTYL Much the same as the ones on earlier levels, but the birds on this level also have spikes on their backs. Therefore, they can only be killed by a charge.



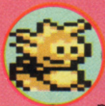
SPIKY BACK Looking rather similar to Bub and Bob (*from Bubble Bobble – Ed*), this little chap simply sits on the spot firing out bullets in Mayhem's direction.



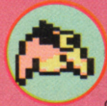
SPIKEYSAURUS The only inhabitant in Monsterland who's totally, entirely, completely and unquestionably invincible. Yep, this one is well 'ard, and not even a shield will help you. The answer? Jump over it.



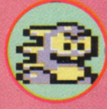
CANNONBALL As with the earlier incarnations, this is indestructible, but it shouldn't prove to be much of a problem – it only appears once in the entire level (on both the SAD and HAPPY versions).



SPIKES & SHELL Identical to its previous counterparts, these can only be killed by Mayhem charging into the front of them. One of these blighters guards the finishing line, making skid bonuses very tricky.



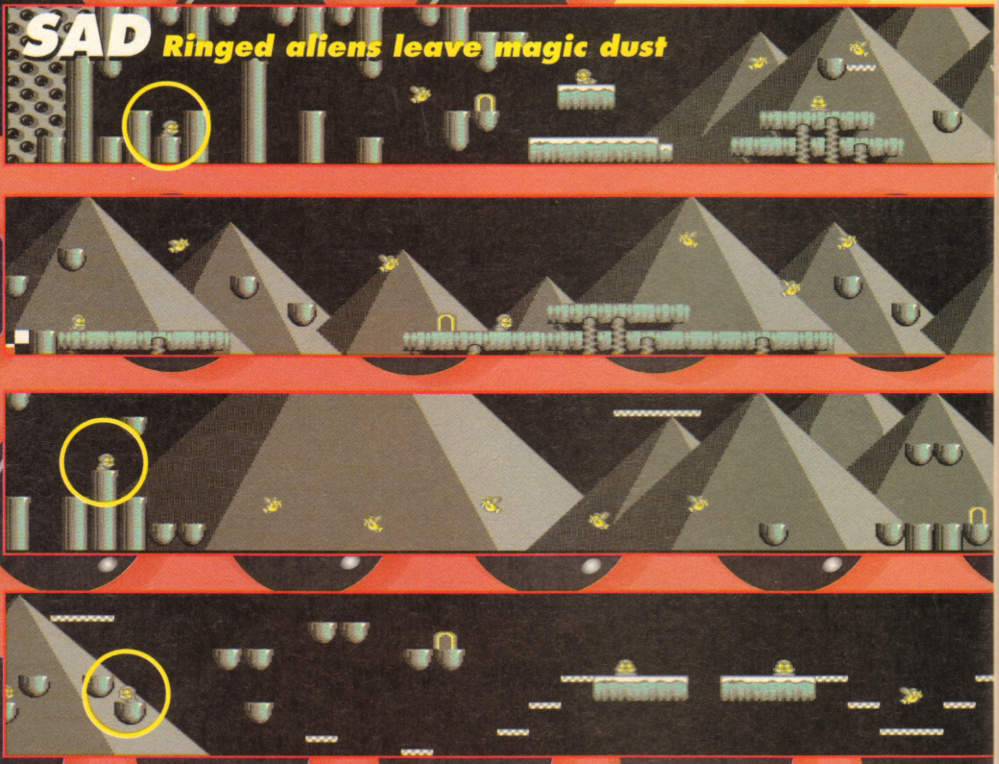
BOBODACTYL These are found throughout the level, and virtually all of them are springboard monsters. Other Bobos, particularly the red ones, act merely as stepping stones. There is a huge chasm half-way through the level which must be crossed by using these chaps. It's very tough too.



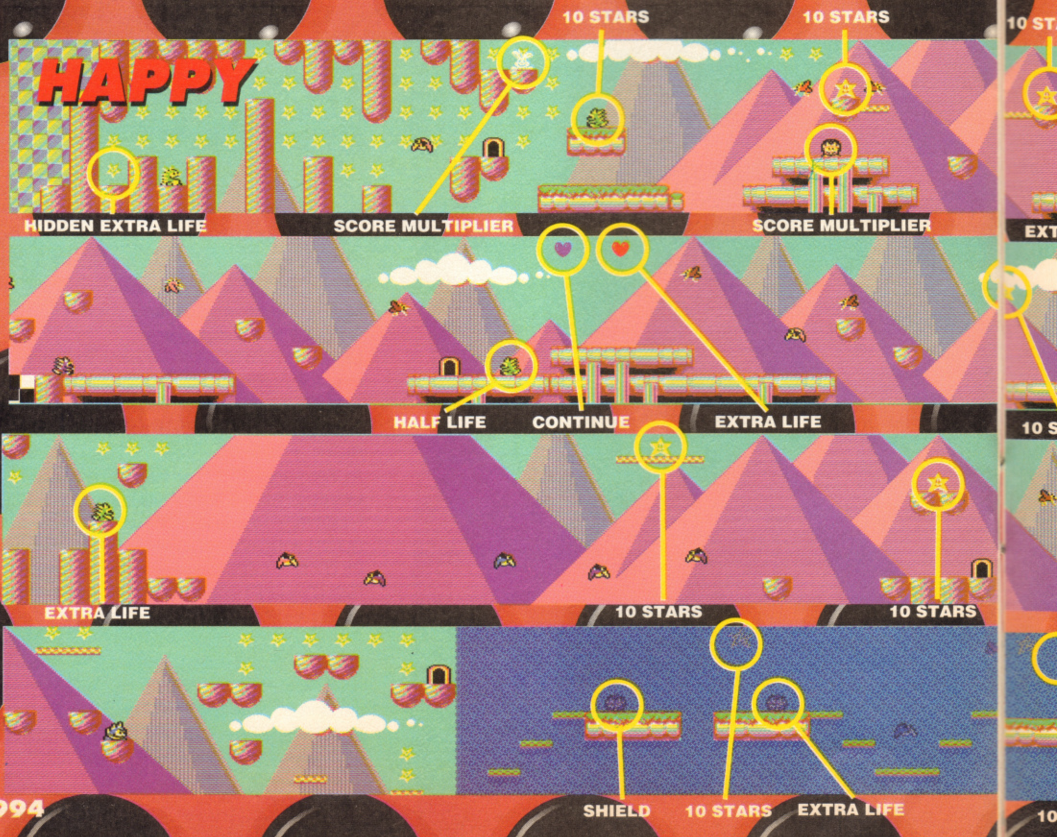
SPIKY DUCKER Similar to the Spikes & Shell in that Mayhem can only kill it by charging into the front of it. Certain static versions will turn their back (and spikes) on Mayhem, so take care.

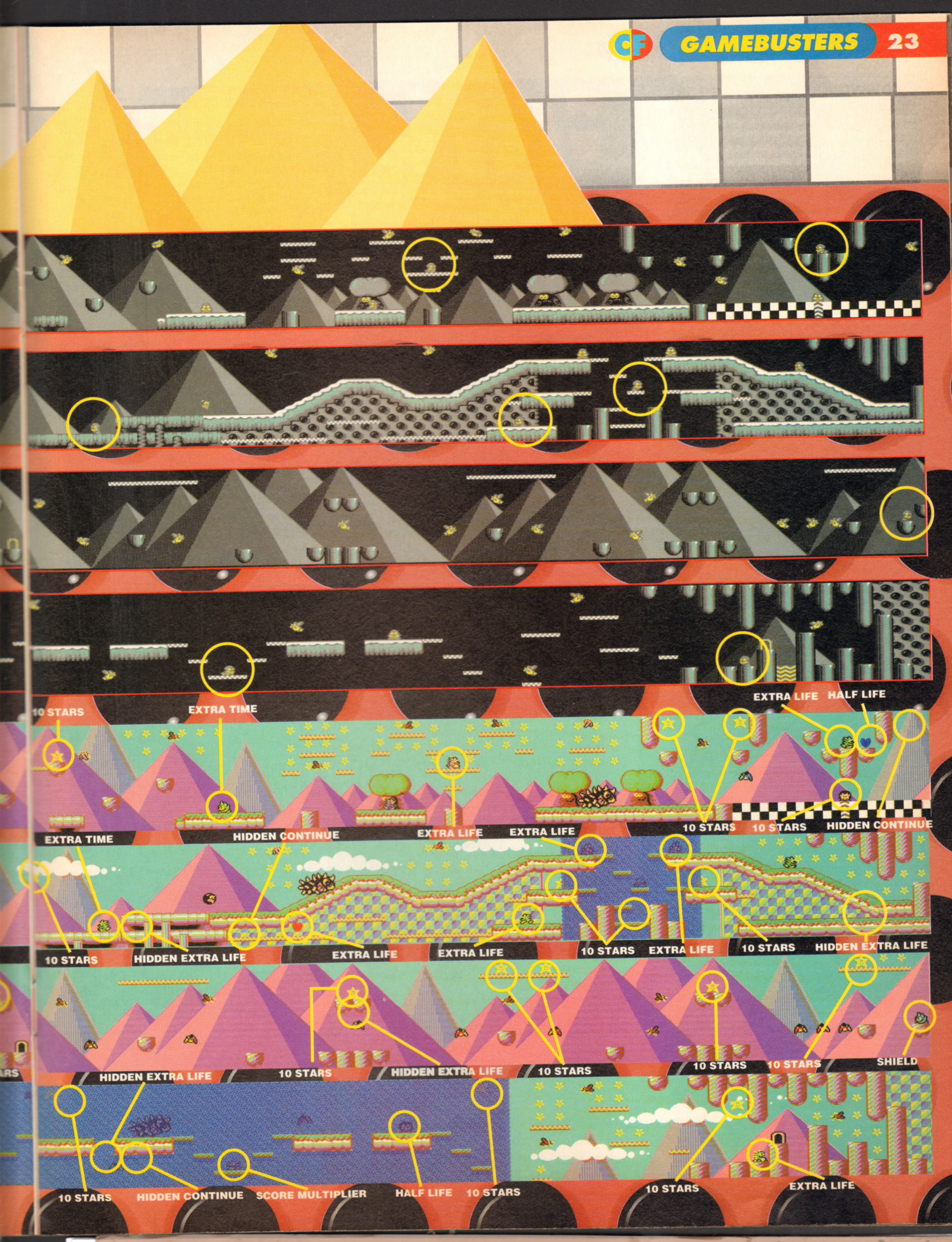
A BIG CHEERS!

Multi-talented though I am, this series of maps and tips wouldn't have been possible without the assistance of Jason 'Kenz' Mackenzie (and his printer), not forgetting John and Steve Rowlands for creating such an awesome game in the first place.



SAD Ringed aliens leave magic dust




10 STARS
EXTRA TIME
EXTRA LIFE
HALF LIFE
EXTRA TIME
HIDDEN CONTINUE
EXTRA LIFE
EXTRA LIFE
10 STARS
10 STARS
HIDDEN CONTINUE
10 STARS
HIDDEN EXTRA LIFE
EXTRA LIFE
EXTRA LIFE
10 STARS
EXTRA LIFE
10 STARS
HIDDEN EXTRA LIFE
ARS
HIDDEN EXTRA LIFE
10 STARS
HIDDEN EXTRA LIFE
10 STARS
10 STARS
10 STARS
SHIELD
10 STARS
HIDDEN CONTINUE
SCORE MULTIPLIER
HALF LIFE
10 STARS
10 STARS
EXTRA LIFE

GAMEBUSTERS

PSYCHO HOPPER
(MASTERTRONIC)

This is what happens when some deranged mind crosses Vinny Jones with a pogo stick. For an infinite supply of lives, simply type in the following listing.

```
0 REM PSYCHO HOPPER CHEAT BY WAZ
1 FOR X=333 TO 378:READ Y:C=C+Y:POKE X,Y:NEXT
2 IF C<>6239 THEN PRINT "DATA ERROR":END
3 POKE 157,128:SYS 333
4 DATA 032,086,245,169,093,141,248,002
5 DATA 169,001,141,249,002,076,208,002
6 DATA 169,032,141,246,195,169,111,141
7 DATA 247,195,169,001,141,248,195,076
8 DATA 081,194,141,032,208,206,032,208
9 DATA 169,173,141,169,049,096
```

SKOOLDAZE
(MICROSPHERE/ALTERNATIVE)

The happiest days of your life? They certainly will be if you type in this listing POKE (*I've heard some bad links in my time but that deserves a prize – Dave*).

```
0 REM SKOOLDAZE CHEAT BY WAZ
1 FOR X=269 TO 304:READ Y:C=C+Y:POKE X,Y:NEXT
2 IF C<>3872 THEN PRINT "DATA ERROR":END
3 POKE 157,128:SYS 269
4 DATA 032,086,245,169,032,141,240,003
5 DATA 169,001,141,242,003,076,174,002
6 DATA 087,065,090,238,032,208,169,234
7 DATA 141,008,037,141,009,037,169,165
8 DATA 141,012,037,096
```

MALFUNCTION! NEED MORE INPUT!

Got a map? Know some tips? Discovered any cheats? If you have, and would like to be the proud recipient of a £20 Software voucher, send your finest tips, maps, solutions, Action Replay POKES, and general gameplaying advice to: Andy Roberts' Gamebusters, *Commodore Format*, 30 Monmouth Street, Bath, Avon, BA1 2BW. Don't forget to include your name and address, along with some family-sized packets of Wotsits.

ACTION REPLAY POKES

Richard Beckett is back again with another bumper helping of Action Replay POKEs. To use them. freeze the game, press E to enter the POKEs, then press F3 to restart the game. It's so easy.

HOCUS FOCUS
POKE 18721,173 – Infinite time

MAGIC RUFUS
POKE 43337,189 – Remove baddies

MIGHTY BOMBJACK
POKE 10869,165 – Power ups

SPAGHETTI WESTERN
POKE 1816,165 – Slow motion

NINJA COMMANDO
POKE 9795,181 – Remove enemies

PRINCE CLUMSY
POKE 14372,173 – Open doors

SPELLBOUND DIZZY
POKE 8388,173 – Lives

SPACE GUN
POKE 6221,181 – Infinite weaponry

WIZBALL

COLOUR COLLECTING

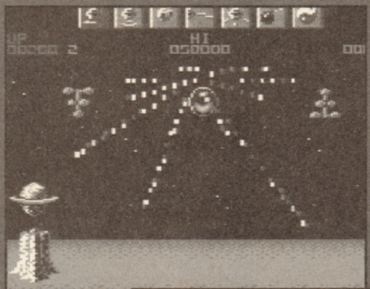
This is perhaps the hardest part of the game, both to understand and to master, and it helps a great deal if you play with a friend so that they can control the cat. Collecting the droplets is a pretty hefty responsibility, as certain drops have detrimental effects:

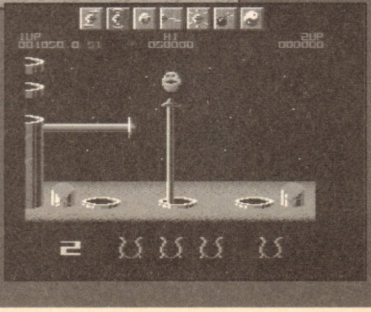
- RED, BLUE and GREEN are the main colours you need to collect.
- LIGHT BLUE drops will trigger a filth raid.
- DARK GREY drops will make the Cat indestructible.
- PURPLE drops will make the Cat crazy
- WHITE drops earn Wiz an extra life.
- BLACK drops turn out the lights until every remaining alien has been shot.

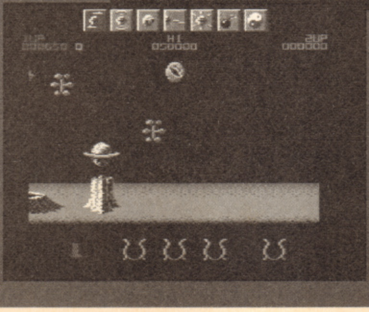
Basically, if you have a black and white television, you're not going to get very far at all with this game. When collecting droplets, keep an eye on the three cauldrons at the bottom of the screen, the right-most one in particular. If the droplets you collect have no effect on this cauldron, then that colour is not needed on that particular level. There are only three levels 'in play' at any one time, so it's fairly easy to keep track of the various colour mixing requirements. If in doubt, just collect everything.

GENERAL TIPS

- If things are looking dangerous (lots of bullets, lots of aliens, etc), hide below the horizon where you'll be immune to alien fire.
- When travelling between levels, look for arrows; they indicate whether the pipe leads up or down.
- Level two only has one exit to level three, and this can be found at the far-left of the level.
- The bonus level is packed to the brim with bonus points, and two extra lives can be earned with a bit of skillful playing.
- In addition, extra lives are awarded for every 100,000 points scored... until your score reaches the maximum of 999,999 that is.







Wizball was probably the idea of someone who wasn't very good at animating sprites.

- The weapons you can choose while Wiz mixes the potions are permanent, so make sure you select thrust and antigrav first.
- The cat is expendable - if the going looks bad, use him as a decoy while the Wiz hides somewhere safe.
- Likewise, if you're playing a two-player game, select the CATSPRAY rather than WIZSPRAY, as the cat can move freely into any area.

WIZ-CHEATS

There are a couple of handy cheats built into the game (thank you very much Mr Programmer, sir). First, if you'd like the normal, boring, clichéd infinite lives, simply type WIZBORE on the title screen (you may have to type this a couple of times).

Alternatively, if you're doing particularly well but suddenly lose your last life, don't get all hot and bothered; pressing the relevant number on the keyboard will take you to the last level you fully completed. Hurrah.

And finally, if you have an Action Replay cartridge (and if not, why not?), you might like to try these POKEs if you're after a considerably easier game:

`POKE 27434,189`	Infinite lives
`POKE 32508,96`	Invincibility

And that, my friend, is yer lot.

THE MULTIHACK RETURNS

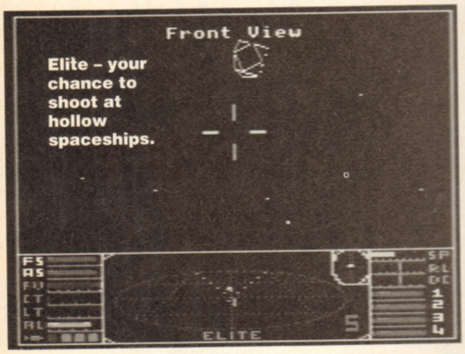
First, type in the Multihack listing, check it for errors, then SAVE it for future use. To use the listing, simply add the dataline of the game you want to cheat on. Let's take *Game Over 2* part 1, for example; LOAD up the multihack listing, add the dataline (line 20), then type RUN and insert the rewound *Game Over 2* cassette – it's as simple as that. Many of the games have more than one dataline, so be sure to type in all of them; for example, *Elite* has six datalines. And note that the multihack will NOT work unless you add a dataline.

```
0 REM CODEMASTERS MULTIHACK LISTING
1 REM (C) WARREN PILKINGTON/CF 1994
2 FOR X=512 TO 580:READ Y:C=C+Y:POKE
X,Y:NEXT
3 IF C<>7483 THEN PRINT "DATA ERROR":END
4 READ Y:IF Y=-1 THEN POKE 157,128:SYS 512
5 POKE X,Y:X=X+1:GOTO 4
10 DATA 032,044,247,056,169,016,141,062
11 DATA 003,169,017,141,064,003,032,108
12 DATA 245,169,032,141,068,017,169,057
13 DATA 141,069,017,169,002,141,070,017
14 DATA 162,255,189,193,016,157,193,002
15 DATA 202,208,247,162,033,189,159,016
16 DATA 157,159,002,202,208,247,076,120
17 DATA 003,072,206,032,208,032,069,002
18 DATA 104,044,013,220,096
```

ELITE

INFINITE SHIELDS, FUEL, LESS ENERGY LOSS

```
20 DATA 169,080,141,052,029,169,002,141
21 DATA 053,029,096,169,234,141,225,115
22 DATA 141,226,115,141,227,115,169,255
23 DATA 141,232,123,141,250,123,169,173
24 DATA 141,100,123,076,111,136,-1
```



Elite – your chance to shoot at hollow spaceships.

GAME OVER

INFINITE LIVES, ENERGY, & MISSILES

```
20 DATA 169,165,141,206,060,141,081,022
21 DATA 169,234,141,140,059,141,141,059
22 DATA 096,-1
```

GAME OVER 2 - PART 1

INFINITE LIVES

```
20 DATA 169,173,141,200,152,096,-1
```

GAME OVER 2 - PART 2

INFINITE LIVES

```
20 DATA 169,173,141,017,176,096,-1
```

DEMONS OF TOPAZ

INFINITE LIVES & NO COLLISION

```
20 DATA 169,173,141,170,056,169,234,141
21 DATA 128,052,141,129,052,141,130,052
22 DATA 141,055,048,141,056,048,141,057
23 DATA 048,096,-1
```

SOS

Can't get by that end-of-level guardian? Is there a key that you just can't locate? Do you need some help basting your way through those enemy attack squads? If you're stuck on any game, no matter how old, how obscure, or how embarrassingly easy, our Andy has the right cheat for you.

CREATURES 2 (THALAMUS)

It's about time we mentioned an Apex game, so here is the infinite lives cheat, sought after by Tony Cromwell from Warrington. On the title screen, wait for the credits to appear (with the six dancing fuzzies at the top). Now quickly wet a finger (any one will do) and rub it across Joystick PORT 1. A big picture of Maximus Mouse will appear, waggling his arms as you rub your finger. Keep doing this until he turns grey, at which point the fuzzy-fountain will start to flash, indicating that infinite lives are now yours. This will work on both the cassette and disk versions of the game.

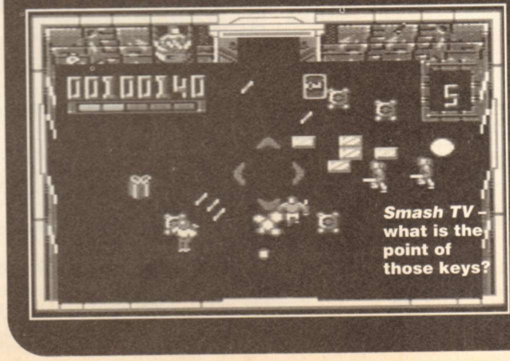
DIZZY, PRINCE OF THE YOLKFOLK
(CODEMASTERS)

Method acting.

A young chap by the name of Leigh Brassington over there in sunny, sunny Australia is having a little trouble with the objects in the fifth *Dizzy* game. In particular, he wants to know where the CARPET, BLOCK, POTION and BREAD come into play. The BLOCK is merely an object used to hide one of the cherries, and the other objects have no use whatsoever – we professionals call them red-herrings.

SMASH TV
(OCEAN/HIT SQUAD)

John Paul Feehily from Tubbercurry (*Tub of curry? sounds good to me! – Dave*) is having a few problems with this 'laser-death-slaughter' romp. In other words, he's finished the game but hasn't managed to find the entrance to the Pleasure Dome. Basically, it doesn't exist, as the programmer didn't have space to include it in the C64 version. It might also annoy you to know that the keys collected during the game don't actually do anything.Er, sorry (*it's okay Andy, we don't blame you personally – Dave*).



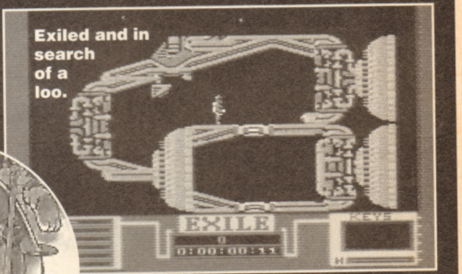
Smash TV – what is the point of those keys?

KNIGHTMARE
(ACTIVISION/RICOCHET)

Having trouble with this game? A certain person, known to his/her friends as K Budd from Padstow, is after a password to open doors, as he/she is stuck in the second room. Well, there are no passwords as such, but here's how to get out of that pesky second room: TAKE FOOD, GIVE FOOD, GIVE WATER, ASK OLD MAN, TAKE SPADE, OPEN DOOR, GO RIGHT, DIG GROUND, and you'll suddenly emerge in the next room. Warning: do NOT go back through the door to your left!

FANTASY WORLD DIZZY
(CODEMASTERS)

Here's another *Dizzy* adventures causing more than its fair share of problems, especially for Neil Skinner from East Grinstead – he just can't get past the wide-eyed dragon. In fact, it's quite simple – just collect the SLEEPING potion from DOZY and drop it next to the dragon who will then go into a very deep, sneak-pastable sleep. However, getting to Dozy isn't that simple, as there is a rather large gap to get across (hint: try using a few boulders).



Exiled and in search of a loo.

EXILE (POWERPACK DEMO)

Chris from Oldbury wrote in for a list of Action Replay POKEs for Exile, which, in fact, we printed ages ago in *CF*15. But, what the heck, if repeats (or 'another chance to catch those classics') are good enough for the BBC they're good enough for us

`POKE 41911,255`	Infinite Jet-Pack energy
`POKE 41880,255`	
`POKE 41912,255`	Gun and infinite bullets
`POKE 41881,255`	
`POKE 41913,255`	Icer and infinite bullets
`POKE 41882,255`	
`POKE 41914,255`	Blaster and infinite energy
`POKE 41884,255`	
`POKE 41916,255`	Shield and infinite energy
`POKE 41879,255`	Booster
`POKE 46803,173`	
`POKE 41898,15`	Infinite plasma balls
`POKE 46803,206`	
`POKE 41898,(1-255)`	To pull unusual things from your pockets
`POKE 34446,200`	'Dropzone' explosions
`POKE 41923,33`	Turns you into an imp

ARE YOU IN DISTRESS?

If you need help with a particular game, SOS is at your service. Send your missives of gameplaying woes to: SOS, Gamebusters, *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW.

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POWER PACK
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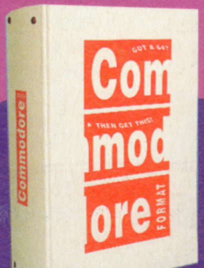
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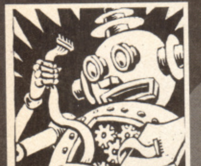
TECHIE TIPS

C64's are tricky little blighters. Few truly understand their dark complex nature. One who does is Jason Finch, and he doesn't care who knows it.



SORTED, MATE!

Dear Techie Tips,

1 I have a Commodore 64 with the new casing. Are the inner guts of this one any different to the old ugly-looking one? The reason I ask is that one of my games works perfectly on the older model, but on mine the sound is horrible.

2 How do you suggest I read in numbers after a SYS statement? For example `SYS 49152,24,255,64432...` The numbers never need to exceed 65535 and they are always positive. I need a routine that will work with both numbers and variables. And what about reading in text?

3 I am always reading questions about how to 'sort' this, that or the other in various computer magazines. The bubble sort is the normal method recommended, which isn't exactly fast. I have written a Basic sort routine which works on the binary principle. It is slower than the bubble sort for the first 10 variables but after that it will work double, triple and even quadruple the speed of the bubble sort routine.

```
1 FOR Y=2 TO X:LO=1:HI=Y
2 M=INT(LO+(HI-LO)/2)
3 IF (M=LO) OR (M=HI) THEN GOTO 6
4 IF A$(Y)>A$(M) THEN LO=M:GOTO 2
5 IF A$(Y)<A$(M) THEN HI=M:GOTO 2
6 IF A$(Y)>A$(M) THEN M=M+1
7 B$=A$(Y)
8 FOR Z=Y TO (M+1) STEP -1:A$(Z)=A$(Z-1):NEXT Z
9 A$(M)=B$:NEXT Y
```

The variable X is the total number of strings to be sorted. A$() is the array containing the strings. I am always using A$(0) for special data, so my routine does not sort this one. My routine is given the lowest numbers possible as it works quickest that way because of the GOTOs.

4 You're not going to make this another meal for the dustbin, are you?

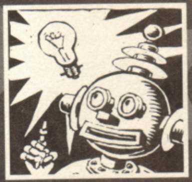
Morten Brendefur, Norway.

1 Lots of things changed, the SID chip being one of them. New C64s have sound chips that make samples sound dead quiet. The colour tables were also changed, as was the way the computer clears the screen. Connections in the serial port were also altered; the RESET was dropped basically.

2 Write a routine that does `JSR $E20E, JSR $AD9E, JSR $B7F7, LDA $14, LDX $15` and then `RTS`. Call this every time you want to read in a number after a comma, whether it's an actual number or a variable. The number will be returned in low/high byte format in locations `$14` and `$15`.

3 No! No! I refuse to say it! (*Go on – Dave.*) No, I will not say, 'totally sorted' – I refuse!

4 No, I prefer to throw letters on to the open fire in the lounge. It saves me having to buy so much coal.



SHORT'N' SWEET

Dear Techie Tips,

1 Why did TMB become less funny and less useful just before Hutch left?

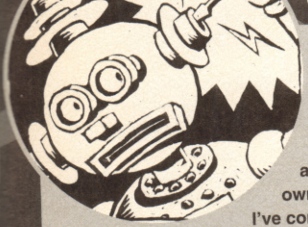
2 What is bitmap mode?

3 How can I horizontally expand text?

Myke Futcher, Chesterfield.

1 TMB didn't. You simply had a momentary humour bypass, quite obviously.

2 Do `POKE 53265,59`, sit back and smile. That is bitmap mode. Basically it allows you to alter every single dot on the screen individually. This allows you to draw pictures and stuff because you are not limited to simple characters; you can plot what you like on



I LIKE TO MOVE IT

Dear Techie Tips,

I like experimenting and coming up with my own character sets but I've come across a problem; that of where to store the sets. I found out that the last place I can store them is from location 14336 to 16383, which uses up part of the bitmap screen. Unfortunately I want to use the bitmap screen for something else, other than storing my character sets. I can't store them at other places lower in memory either. So please could you either give me a Basic program that either moves the bitmap screen or moves the area in which Basic programs are stored? Thanks very much and keep up the good work on this most excellent section of *CF*!

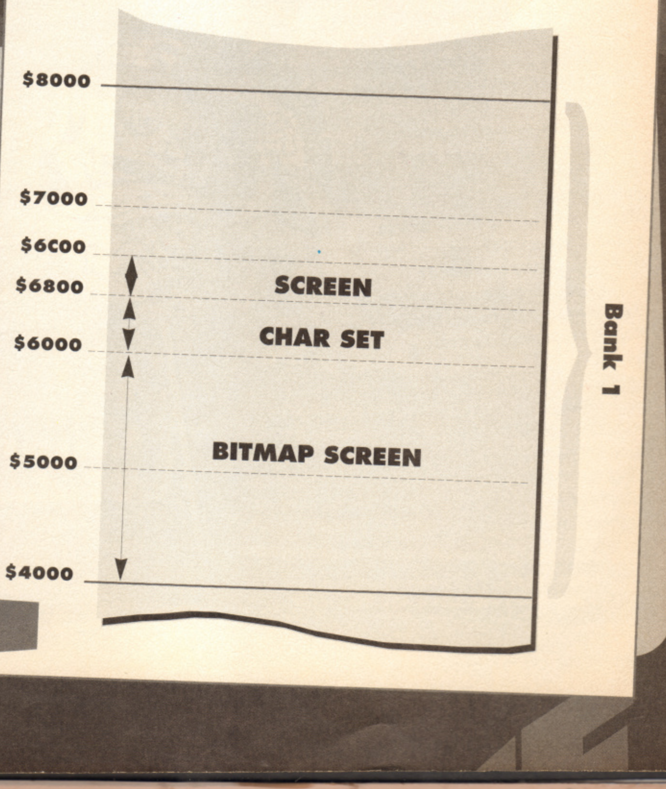
David Gammon, Essex.

If you go back to *CF*40 you will find a letter titled SWITCH BANKS that deals with this particular type of problem. In the meantime, enter the following:

```
10 POKE 56578,63
20 POKE 56576,150
30 POKE 53272,169:POKE
53265,27
40 POKE 648,104
```

This moves the screen up to $6800 (26624 in normal numbers) and the character set to $6000 (24576). You can then bung a bitmap at $4000–$6000 (16384 to 24576) and everything will work perfectly. Change line 30 to read `POKE 53272,161:POKE 53265,59` to get the bitmap up. However, to understand all this you should refer back to *CF*40.

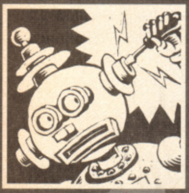
WHERE TO STORE CHARACTER SETS



The dollar signs refer to the amount of money you need to spend on books to make sense of all this. Mmm.

the screen. There are 320 dots, known as pixels, across the screen and 200 down it.

3 There is no simple way to horizontally expand text. Perhaps you have seen the big character sets in Techie Tips in the past, the ones that are expanded vertically. They are produced using a character editor or a nifty piece of machine language. You would have to redefine the character set and create your own big letters.



NEW RECRUIT

Dear Techie Tips,
I have just got into Basic programming on the C64 and the Speccy +2. I am having problems with the C64.

1 What is the command you need to use to clear the screen? I know that it's CLS on the Spectrum but that doesn't work on the C64.

2 How do you pause the screen for 45 seconds?

3 How do you pause the screen until somebody presses a key?

Kiev Forsyth, Inverness.

1 The C64 uses things called control codes to do a lot of the special stuff like move the cursor, change the cursor colour, select reversed text and so on. Give `PRINT CHR$(147)` a whirl to clear the screen.

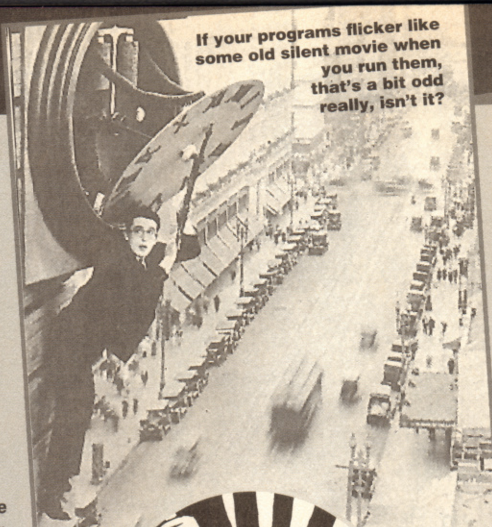
2 There is a clock on the C64 which is controlled using the variable `TI$`. The variable `TI` is also altered, and represents the number of 1/50ths of a second that have elapsed since it was reset. Here's an example of how to use this to control pausing:

```
10 PRINT "STAGE 1"
20 TI$="000000":REM RESET CLOCK TO ZERO
30 IF TI<(45*50) THEN 30:REM PAUSE FOR 45
SECONDS
40 PRINT "STAGE 2"
```

3 There are loads of ways to pause the screen until a key is pressed. One of them is to use the GET command, and here's how you do it:

```
10 PRINT "STAGE 1"
20 GET A$:IF A$="" THEN 20
30 PRINT "STAGE 2"
```

Oh yeah, and persevere with the C64 rather than the Spectrum, okay. The Speccy might seem easier to understand now, but it just doesn't offer you the power that the C64 does. It'll be worth the effort.



If your programs flicker like some old silent movie when you run them, that's a bit odd really, isn't it?

FLICKER FIXER

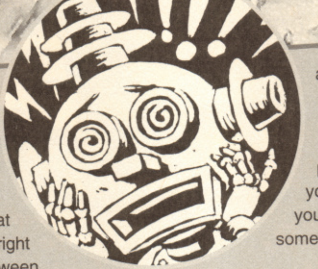
Dear Techie Tips,
I have written a machine language program and have used raster interrupts to get the border and background colours to change at various positions down the screen. However, every time I change colours there is this annoying flickering where they change. I have never seen a game with anything other than smooth changes on raster colour bars.

1 What causes this?

2 Can I get rid of it?

3 How do I get rid of it?

Graeme Irving, Leeds.



1 The problem is caused by the fact that the raster is not 'latching' in exactly the right place to produce smooth transitions between colour changes. You have to get your head around the concept of cycles before you can understand what's going on. And I don't mean those metal things with a wheel at each end. Basically each instruction in the machine language set takes a very short time to run; a command such as `LDA #$A9`, for example, would take two cycles. One cycle is one millionth of a second (or the length of time it take Dave to devour a Mars Bar) in a perfect C64 world.

2 Once you have latched the raster, the little beam thing that sweeps down the display will be on the right vertical line but will have swept part way across the screen by the time you come to change the colours. So, in theory, by telling the computer to wait a fraction of a millisecond you will allow the beam to sweep all the way across the screen and wait until it's definitely ready at the left-hand side of the display.

3 In practice it is done by putting a short loop at the start of your interrupt routine. Like, before you change your colours, do something like:

```
     LDX #$09
LOOP DEX
     BNE LOOP
```

This short loop makes the C64 twiddle its thumbs for a while, as it waits for the raster to get into the right place (you know how it is with these rasters). If you add this loop and then change the number, you will see that the flickering moves. Keep changing the number until it disappears off the right hand side of the screen.

DOTTY DESIGNS

Dear Techie Tips,
Suddenly, throughout the country, a load of weird posters have started to appear in poster shops. They started off in single colours with big dots. Now they've changed into the full technicolour jobs with swirling patterns and even proper pictures being visible. The strange thing about these posters? When you look at them for a while you start to see a three dimensional picture appearing!

1 Have you seen these posters?

2 I've got three of them. Have you got any?

3 Are there any of these things available on a C64?

4 How are they produced?

5 Can you give me a program that will create these pictures on the C64?

Robert Pickering, Barnsley.

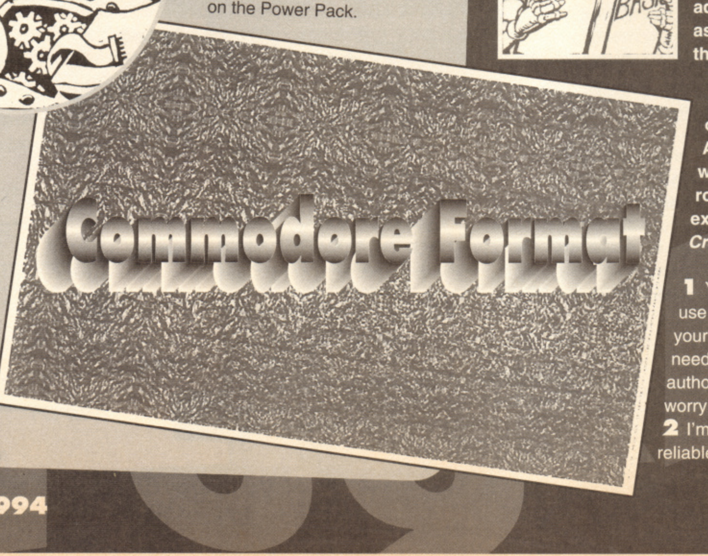
1 Seeing as how a certain poster shop is my second home, it would be hard for me not to have noticed them. Or perhaps I was just attracted to them by the hordes of people gazing into poster shop windows going, "Can you see it?".

2 Dotty posters? Yes, I've got one of some dolphins.

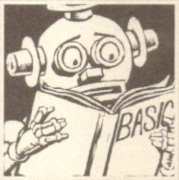
3 'These things' are technically called Random Dot Stereograms. Erm, the only ones I've seen are the ones produced by the machine language program that I wrote when I had found out how they were created.

4 It's dead easy, honest. But the algorithm is a bit long-winded to explain here.

5 I am just perfecting my program so that it will work with patterns. At the moment you get a load of coloured dots on the screen and, when you look for long enough, you do indeed see a three dimensional image. Hurrah! It even works on a C64 screen. Coooool. When it's finished I'll see what Dave has to say about putting an RDS editor on the Power Pack.



Nope, sorry, I've been staring at it for ages and I can't see any 3D pictures.



LEGAL BEAGLE

Dear Techie Tips,

1 Is it legal to use text I have created the Public Domain utility *Real Writer* in my own adverts? Or would I need to ask the programmers for their permission?

2 Do you know of anywhere I could get hold of a copy of *GeoPublish*? Also, would it be compatible with *GeoWrite v1.2* and roughly how much should I expect to pay?

Craig Payne, Rotherham.

1 Yes, it is entirely legal to use *Real Writer*-created blurb in your adverts, and no, you don't need the permission of the authors, so there's no need to worry about visits from ELSPA.

2 I'm not aware of any completely reliable sources of the *GeoPublish*

WHAT A DUMP

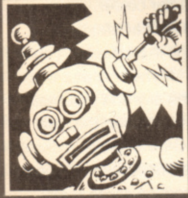
Dear Techie Tips,
The listing that I have sent to you with this letter is my character printer. It prints out the C64's characters using POKE codes in normal order or even in reverse order. Do not change 788-789 or 679-766 as they contain the vital code!

```
0 REM ASCII CHAR PRINTER BY J.HOSKING
1 FOR X=679 TO 766:READ Y:C=C+Y:POKE
X,Y:NEXT
2 IF C<>10318 THEN PRINT "DATA ERROR":END
3 PRINT CHR$(147)
4 PRINT "TO ENABLE:  SYS 708"
5 PRINT "TO DISABLE: SYS 696"
6 PRINT "PRESS LEFT ARROW TO SEE ALL CODES"
7 PRINT "PRESS * TO SEE IN REVERSE ORDER"
8 :
10 DATA 162,000,160,000,138,153,000,004
11 DATA 232,200,192,255,208,246,076,239
12 DATA 002,120,162,049,160,234,142,020
13 DATA 003,140,021,003,096,120,162,208
14 DATA 160,002,142,020,003,140,021,003
15 DATA 096,174,215,000,224,095,208,003
16 DATA 076,167,002,224,042,208,030,162
17 DATA 255,160,000,138,153,000,004,202
18 DATA 200,192,255,208,246,076,239,002
19 DATA 162,020,142,215,000,142,119,002
20 DATA 162,001,142,198,000,076,049,234
```

Jonathan Hosking, Norfolk.

Thanks a lot for your program. In case people are wondering how it works, it sets up an interrupt that checks out the keyboard buffer. When it finds one of the two keys have been pressed, it dumps the character set to the top of the screen and removes the key from the buffer. It uses a machine language version of `FOR X=0 TO 255:POKE 1024+X,X:NEXT X` to get all the characters displayed.

software in this country. However, write to Frank Cassidy at GeoClub, 55 High Bank Road, Droylsden, Manchester. GeoClub is a well-established club for *GEOS* users and should be able to recommend a stockist, or maybe even get hold of a copy for you. Alternatively, you could always make use of Uncle Dave's Buy-A-Rama.



CRYSTAL CLEAR CARRYING CWESTIONS

Dear Techie Tips,
I have an Action Replay cartridge and am learning to do assembly with it (*sounds like you need to check out our new beginners' guide to machine language series which continues this issue, matey – Dave*).

Why does the machine code monitor accept all machine language instructions except CLC, Clear Carry Flag? Instead of assembling it, I get '???' or something similarly unhelpful. However, if I disassemble `$18` I get `CLC`.
Is this a fault with my cartridge or, if not, how do I get around using `CLC`?
Francis Byrne, Londonderry.

This problem has happened to me on occasions too, mainly when I have entered the monitor using the Freeze menu. If it is playing up every time – and mine also doesn't like `SEC` – I suggest you send your Action Replay cartridge back to Datel and get them to send you another one, because that definitely sounds like a fault with the cartridge to me.

If, however, the problem only happens occasionally, enter `NOP` every time you want a `CLC` and then go through at the end using the `M` function to change the `EA`s to `18`s. It's a bit of a hassle, but, hey, it works.

And that just about wraps it up for Techie Tips for this month, except to apologise for the appalling heading for this letter (I just seem to come over all alliterative sometimes – sorry), to remind you to check out the second part of our new machine code programming series this issue (*I've already done that – Dave*) and to say, "make sure you're here again in 30 days." Bye.

QUICK SHOTS

● **I have just started buying *Commodore Format* now that *Force* has shut down. I must have been an idiot to have had *Commodore Force* when there was *Commodore Format*! Could you tell me how I get a program to run as soon as it loads?**
Andrew Evans, Burton-on-Trent.

Indeed you should have been buying Commodore Format because back in issue *CF*36 there was a program on the covertape that will produce auto-running programs for you. There was also a complete feature devoted to the rather large topic. The solution? You could always buy a back issue – it's soooo easy. Just turn to page 10 for details.

● **I am complaining about the April issue of your mag because of the darkness of the first Techie Tips page. I could hardly read it, so could you please not put the writing on bits of the page that are dark.**
Paul Nairn, Greenock.

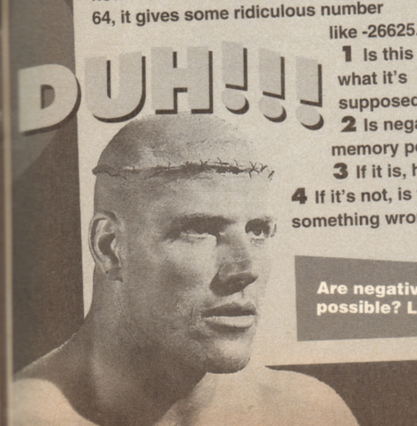
Sorry, Sir. It was a bit dark, wasn't it. However, if you have a video camera you could always take a shot of the page and then play it back on the TV. Pause the screen and turn the brightness up lots. (*Er, yes, actually sorry about the problem with the page; it wasn't designed like that – there were just some printing problems – Dave*).

● **I have recently bought a monitor for my C64 but unfortunately I cannot get the right lead. A friend told me that Maplins could help but when I went to them they told me that they don't make them any more. Could you tell me where I can get one from and how much it will cost?**
S Rehman, Rochdale.

A very good source of things cable-like is Meedmore Ltd, 28 Farriers Way Industrial Estate, Netherton, Merseyside, L30 4XL. Give them a call on ☎ 051-521-2202 first, together with full details of the lead you're after. They will tell you either that such a cable is feasible or that you are dreaming. Oh, and they may even tell you how much it will cost you, because you didn't tell me exactly what type of monitor you were trying to connect the C64 up to.

I'M FREE!

Dear Techie Tips,
Something very strange is happening to my computer. It thinks it has got less than no memory! Yes, that's right. Every time I do `PRINT FRE(0)` to check how much free memory is left on the 64, it gives some ridiculous number like -26625.
1 Is this what it's supposed to do?
2 Is negative memory possible?
3 If it is, how so?
4 If it's not, is there something wrong with my C64?
5 How can I get the C64 to give me the right answer?
Stuart Gilmartin, Ipswich.



Are negative amounts of memory possible? Looking at this bloke, yes.

1 Sort of, yes. In a weird kind of spooky way, this is exactly what it is supposed to do.
2 Not in the normal world; maybe in another parallel universe somewhere in the vastness of the omniverse such bizarre concepts as negative amounts of memory do exist, but I haven't visited such a plane of existence yet.
3 Erm, well it's not, so I can't really, no. Philosophy was never my strong point.
4 You mean apart from the fact that it appears to be living in a sweet little parallel universe of its own? No.
5 Threaten it with a big jug of water and then enter…

```
PRINT FRE(0)-(FRE(0)<0)*65536
```

…and you should get a sensible reply out of your C64. Hopefully.

GOT A PROBLEM?

If you're having technical problems with your C64, or if your manual makes as much sense to you as a David Lynch film, or you're attempts to track down a piece of hardware have been about as successful as Bad Boys Inc single then help is at hand in the form of Jason Finch's world famous Technical Tips section in *Commodore Format*. To enlist his help all you have to do is write to: Techy Tips, *Commodore Format*, Future Publishing, 30 Monmouth Street, Bath, Avon, BA1 2BW. You know it makes sense (unlike the manual).

Thinking of writing a game? Then don't settle for cardboard characters. Spruce up your sprites by taking a tip or two from C64 graphics gurus, John and Steve Rowlands...

But is it ART?

Tricky blighters, sprites. Some people just can't handle them. Not on a personal level, you understand; some people just can't get their heads around designing and animating decent sprites, not even some professional programmers – how many times have you played a game in which the characters look like squashed vegetables? Too many, I bet. Which is hardly surprising because sprites are probably the most complex area of graphic manipulation. So grab yourself a keyboard and a paintbrush and prepare to be educated.

WHAT ARE SPRITES?

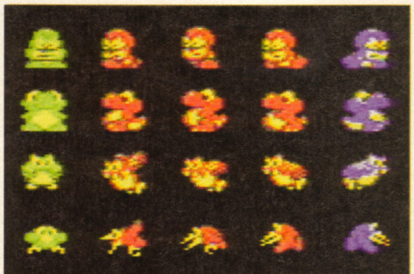
Sprites are, very simply, blocks of data which can be moved around by the computer independent of the rest of the screen (sometimes they're referred to as MOBS – Moveable Object BlockS). Sprites are 24 pixels wide (exactly three characters) by 21 pixels high, and each sprite takes up 64 bytes of memory (the final byte is not used, by the way). Sprites are a godsend for games creators; virtually every alien, car, plane spaceship or cute fluffy bunny you've ever seen in a computer game was almost certainly a sprite. The only drawback to this potential game designer's dream is the number of sprites available; a miserable, pathetic eight on the C64. However, there are ways to get around this (see SPRITE HANDLING).

SPRITE BANKS

The C64's memory is divided into four video banks, each 16k, but only one bank can be 'looked at' by the computer at any one time. A video bank technically has enough space for 256 sprite images, logically because a byte can only hold values from 0-255. Although you can store sprite images anywhere in memory, only those in the current video bank can be used by the C64. But don't forget that the screen (1k) and character set (2k) take up space in the bank too. This leaves you with 208 sprites to play with, although most of our games used around 176 sprites (the other space taken up with two charsets and one screen). As with characters, sprites can be copies or 'banked' into the current video bank, primarily to save precious space.

SPRITE TYPES

Like characters, sprites come in two forms; hi-res or multicolour. But that's where the similarity ends. Sprites are hi-res as a default, but for multicolour sprites you need to POKE the relevant location (`$D01C`, or `53276` in decimal). Regardless of whether a sprite is in hi-res or multicolour mode, its colour will remain the same (sprites can use the full 16-colour palette). Hi-res sprites have the obvious advantage of extra detail, along with the limit of only one colour. In most cases hi-res sprites are combined with other sprites to produce more detailed graphics.



Most of the smaller sprites in *Mayhem* only have three frames of animation.

The most obvious example is the *Mayhem* sprite, which is a multicolour sprite overlaid with a black hi-res outline to produce a sharp, detailed image. The main characters in both *Cyberdyne Warrior* and *Retrograde* used two superimposed hi-res sprites to produce more detailed images – and it shows.

However, using two sprites for the main character limits the amount of sprites on screen, and also effectively doubles the amount of animation frames needed. Even though multicolour sprites offer more colours the chunkier pixels can prove a problem, especially as sprites are so small. For instance, the bonus icons in *Mayhem* were created as hi-res owing to the lack of detail offered by multicolour sprites. As a result, the icons are a lot more effective, so it is worth experimenting with both sprite types.

PRIORITY

There are effectively two types of priority; sprite-to-sprite and sprite-to-background. Even though the VIC chip is a powerful beast, it can't draw two sprites simultaneously. Therefore, if sprites overlap, one must take priority over the other. Sprite 0 has the highest priority, and sprite 7 the lowest. In other words each sprite has a lower priority than the previous one (apart from sprite 0, of course).

The second type is sprite-to-background priority, which is controlled by location `$D01B` (or `53275` in decimal). As a default, sprites have priority over background data. To make a sprite appear behind the background, the relevant bit in location `$D01B` needs to be POKEd. However, sprite-to-background priority is a little more complicated. Regardless of the background graphic mode (hi-res or multicolour), sprites always have priority over the background colour. In hi-res mode, when characters have priority, the sprites will appear in front of the background colour but behind any character data. In multicolour mode, again when characters have priority, sprites will appear in front of the background colour and multicolour 1, but behind multicolour 2 and the character colour.

If you look at *Mayhem*, Spottyland in particular, you will see that Mayhem appears in front of the sky and mountain colours, but behind the tree colours. Careful graphic design and experimentation will allow you to produce some really striking effects.

EXPANSION

In the early days of the C64, expanded sprites were used quite a lot, and made blocky graphics look even blockier. Nowadays, we mature game designers use sprite expansion much more sensibly. For the uninitiated, sprites can be expanded vertically, horizontally or even both, which can effectively double the size of a sprite. For example, expansion can be used to make certain aliens bigger than others, without the need to bolt sprites togethers.

Generally speaking, multicolour sprites should only

MORE TECHY PROGRAM-TYPE STUFF

The following programs have been included not only to illustrate some of our sprite tricks and techniques (and allow us to show off... again), but also to allow any up and coming programmers to include the effects in their own programs. Any of the following routines can be typed in and run independently, but if you want to include them in your latest game simply READ in the data before your program is run, then use the SYS call when you want the effect to start.

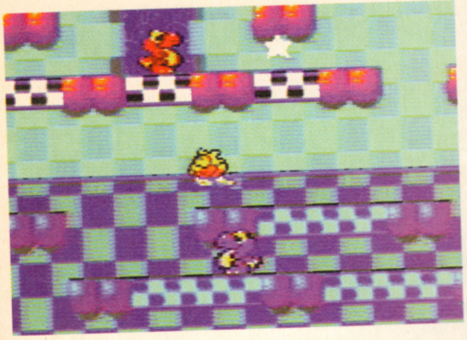
The programs can be resident in memory at the same time (along with the two programs we gave you in last month's 'But Is It Art?') but they cannot be used simultaneously. Sorry'n'all, but that's the way the cookie lands butter side down. Or something like that.

MIXY COLOURS

The first program this month illustrates the 'mixy colours' techniques and, when used within your own programs, will allow you to add more colour to your sprites. The program, when RUN, will toggle the sprite colours 50 times a second (obviously the effect will not be visible until you generate some sprites). The colour table is arranged in pairs (starting with sprite 0) and is located from `49308` to `49323` inclusive. Alternatively you can change the 16 colour values before RUNning the program, starting with the value `014` in line 19. If you don't want mixy colours on a particular sprite, simply make both colours the same. If you change the DATA values in the program, REMEMBER TO ALTER THE CHECKSUM or you'll get a DATA error.

```
0 REM APEX MIXY COLOURS
1 FOR X=49232 TO 49324:READ Y:C=C+Y:POKE X,Y:NEXT
2 IF C<>9585 THEN PRINT "DATA ERROR":END
3 SYS 49232
10 DATA 120,169,127,141,013,220,173,013
11 DATA 220,169,027,141,017,208,169,000
12 DATA 141,018,208,169,119,141,020,003
13 DATA 169,192,141,021,003,169,001,141
14 DATA 025,208,141,026,208,088,096,169
15 DATA 001,141,025,208,173,172,192,073
```

Colour splits area technique which allows Mayhem to be a different colour when he underwater.



be expanded vertically – this makes the pixels square, and doesn't look too chunky, either. Vertically-expanded sprites are used extensively throughout *Monsterland*, most notably on Theo Saurus (would you believe that Theo is only four sprites large?). Expansion can also be used purely for effect; for instance, whenever Clyde collects a potion in *Creatures 2*, expansion is used to create a wibbly wobbly effect.

Hi-res sprites can be expanded in any direction without looking too blocky, effectively gaining the same horizontal resolution as multicolour sprites. The status panel featured in *Mayhem* uses horizontally-expanded sprites to make the words wider, which reduces the number of sprites needed to create the panel (see PRESENTATION). Apart from expansion bolting sprites together is another way to increase the size of your game's inhabitants. The huge nerve centre in *Retrograde*, the end-of-level guardians in *Creatures* or even the massive demons featured in *Creatures 2* are all examples of sprite bolting.

Even though those particular examples relied on sprite splitting (see below), it is still possible to create larger-than-life characters using only a few sprites. If you're still not convinced, take a peek at *Mayhem*'s intro sequence – not one of the dinosaurs is more than three sprites big!

MIXY COLOURS

This is a technique which is very effective but seldom used, and involves the sprite colour toggling between two colours every 50th of a second. To avoid annoying flashes, colours of equal brightness must be used (light blue and pink or purple and orange, for example). We first used this trick in *Creatures*, primarily to increase the amount of colours on-screen. Why put up with the boring, bog-standard colour palette when it's so easy to create new colours? To see more mixy-colour sprites in action, try the hidden bonus rooms in *Creatures 2*, or any 'happy' level from *Mayhem*.

COLOUR SPLITS

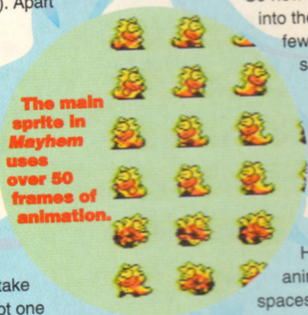
These are similar in principle to multicolour character splits, and are used to increase the amount of on-screen colours (usually splitting the sprite multicolours). Most of our games have used sprite split colours, the most obvious being *Mayhem In Monsterland*. If you take a look at the underwater sections in Spottyland, any submerged monsters have a dark blue outline, while those above water have black outlines.

It is also possible to split a sprite's individual colour, a device used to good effect in Spottyland's underwater section; notice how Mayhem changes colour as he dips into the water. Colour splits were also used on the title screen to add a raster-bar effect to the word MONSTERLAND.

ANIMATION

This is probably the hardest part of graphic design to master, and demands plenty of thought, care and attention. Jerky animation is easy to spot, and can turn a classic game into an average one. Obviously the animation has to be limited, as there may not be a lot of space for the animation frames, but generally speaking the animations for the main character can afford to use more frames than most. After all, the main character is the one thing which gameplayers will be concentrating on for most of the game. It might not surprise you to learn that Mayhem has in excess of 50 animation frames.

So how did we cram all of the other monsters into the remaining space? There are quite a few techniques which will allow you to save valuable space. If you take a close look at most of the small monsters, you can see that nearly all of them 'walk' using just three frames of animation in a loop. Although the result isn't silky-smooth, it works splendidly, which is why a lot of C64 graphic artists use this technique. Humanoid figures are a lot harder to animate than, say, shiny, metallic spaceships, so careful observation, patience, attention to detail and even an outside opinion are often the key to success.



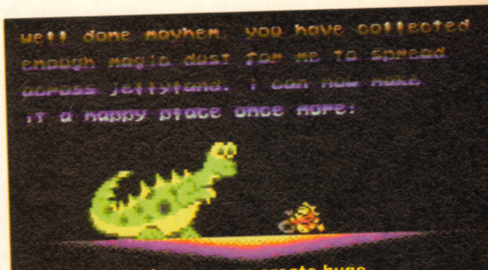
The main sprite in Mayhem uses over 50 frames of animation.

PRESENTATION

Sprites are very versatile and needn't be confined to just monsters, aliens or spaceships. They are capable of much, much more. Many games, for instance, use sprites to represent the status panel. This allows the status area to be superimposed on top of the playing area. How many games have you seen with tiny playing areas and large status panels? You can bet your life they weren't using sprites. Sprite-based status panels were used in *Creatures*, *Creatures 2* and *Mayhem* specifically to increase the playing area to full-screen proportions.

This brings to light another handy trick; sprites in the border. The enhanced playing areas were only possible because the sprite-based status panels were situated in the lower border. In the case of *Creatures 2*, the top border was actually part of the playing area. How is it possible? The C64 isn't completely perfect, and as a result the hardware contains a few bugs (or errors, for the hard of thinking). One of these bugs allows the top and bottom borders to be 'turned off', and thus sprites can be placed in these forbidden areas to achieve various effects. Check out the NO BORDERS elsewhere on this page.

Finally, sprites are also used extensively for presentation purposes; logos, fireworks, stars, wobbly text, etc. Most of our title screens, get ready screens and high score tables use sprites to enhance the atmosphere or add colour and life.



well done mayhem. you have collected
enough magic dust for me to spread
across jellyland. i can now make
it a happy place once more:

Using expansion you can create huge characters from just a few sprites

SPRITE SPLITTING

As mentioned earlier, the C64's VIC chip can only generate eight hardware sprites, no more, no less. However, by using raster interrupts it is possible to 'split' the sprites in order to produce anything up to 128 on-screen sprites (although most commercial games don't usually use this many). This is slightly restrictive, as the sprites cannot move out of their particular screen 'band'. *Mayhem In Monsterland* utilises two sprite splits, allowing a maximum of 15 enemy sprites on-screen – the other three sprites in each band are used for Mayhem himself.

Sprite multiplexing is another technique, whereby the C64 generates a table of 'Y' positions and generates the sprite splits accordingly. Games such as *Armalyte* and *Citadel* use multiplexors, as there is much more freedom compared to conventional sprite splits. For more information on these methods, check out the Mr Plexor features in issues 40-42, as we don't have enough space to go into detail here. If you'd like to see some simply spiffy sprite splitting in action, check out the nerve centres in *Retrograde*, or even the ever-so-huge demons in *Creatures 2*.

And that's yer lot. Go forth and paint!

```
16 DATA 001,141,172,192,168,162,000,185
17 DATA 156,192,157,039,208,200,200,232
18 DATA 224,008,144,243,169,000,141,018
19 DATA 208,076,049,234,014,005,010,012
20 DATA 010,005,014,010,007,013,006,002
21 DATA 008,004,006,011,000
```

BORDER BEATER

This program will effectively 'remove' the top and bottom borders of the screen, enabling you to put sprites into the border area. When you RUN the program, the borders might contain some garbage – this can be removed using POKE 16383,0 (this is, in fact, the last byte in the video bank, so be careful where you put your character sets and sprites). Also. make sure that any sprites appearing in the border have priority over characters. If you change the DATA values in the program, REMEMBER TO ALTER THE CHECKSUM.

```
0 REM APEX NO BORDERS
1 FOR X=49152 TO 49231:READ Y:C=C+Y:POKE X,Y:NEXT
2 IF C<>9724 THEN PRINT "DATA ERROR":END
3 SYS 49152
10 DATA 120,169,127,141,013,220,173,013
11 DATA 220,169,027,141,017,208,169,249
12 DATA 141,018,208,169,044,141,020,003
13 DATA 169,192,141,021,003,169,001,141
14 DATA 025,208,141,026,208,088,169,000
15 DATA 141,255,063,096,169,001,141,025
16 DATA 208,173,017,208,041,247,141,017
17 DATA 208,173,018,208,208,251,173,017
18 DATA 208,041,127,009,008,141,017,208
19 DATA 169,249,141,018,208,076,049,234
```

● And just in case you missed this little program last issue, this listing can be used directly (or even within your own programs) to 'turn off' any of the four effects.

```
0 REM APEX RASTERS OFF
1 FOR X=49569 TO 49590:READ Y:C=C+Y:POKE X,Y:NEXT
2 IF C<>2496 THEN PRINT "DATA ERROR":END
3 SYS 49569
10 DATA 120,169,174,141,020,003,169,193
11 DATA 141,021,003,088,096,169,001,141
12 DATA 025,208,076,049,234,255
```

Parlez vous Machine language? Sprechen sie Assembly? Niet? Puis Jason Finch, techie-meister supremissimo teacherais-vous... er, how to. Okay?

MEAN machine CODE

This month we're going to look in more detail at the load and store instructions. The instruction set – which is basically just the list of words that the 'pooter recognises as ML – can be divided into different types of instructions. So, I'll also tell you about the compare and branching instructions; the sort of ML equivalent of "IF something is something THEN do something else". The load, store, compare and branch instructions are the easiest four groups to learn about. And what a good job that is, 'cos they're the ones you'll be using the most. This month I'm also going to make sure you understand everything about the ML index registers. If I have to use a brick in order to do this, I shall.

Don't forget that a dollar sign ($) means that the number that follows it is in hexadecimal – check out last issue to remind yourself what this means. I'll start with a brief recap of what you learned last month.

■ BRIEF REMINDERS

I hope you've got the idea of loading into your head by now, because if you haven't you might as well give up and join the foreign legion (or re-read last month's feature, it's a bit less drastic). You should have also sussed out that you can only really work with three main variables in ML – the accumulator and the X and Y index registers. You will recall that we looked at examples along the lines of `LDA #$05` last month. This is the ML equivalent of the Basic instruction `A=5`. Remember that the hash sign (#) means that the 5 is an actual number and not a location in memory. Had I said `LDA $05`, then the Basic equivalent would have been `A=PEEK(5)` because we would be loading the accumulator with the number stored at location 5.

Storing is all about shoving things somewhere, like you may store your dirty clothes under your bed when your mum comes in your bedroom. If you've got something in a register, like the accumulator, you can store it in memory. Storing can only be done to memory – you couldn't store a number in another number. That'd be like saying, "put my bed in my chair," or something just as silly. So `STA $D020` is the equivalent of `POKE 53280,A` (`$D020` in hexadecimal is `53280` in normal numbers).

So now you can load, and you can store. What a dude. `LDA #$05` followed by `STA $D020` will do `POKE 53280,5` because you say `A=5` and then `POKE 53280,A`. Of course you remember all that from last month, so let's get on with the new stuff!

■ MORE AND MORE

Type in the Basic version of program 2.1 and run it; you should find that you get a weird sprite appearing in the middle of the screen. The screen should have a red border and a green background, and the sprite should be yellow. A hideous combination, but it's only to prove a point.

In ML this would just be a series of load and store instructions. You could use the same register for them all, and probably this would be the accumulator. Alternatively you could be weird and use all three registers. Let's look at a couple of ways you could write that program in machine language. Use your Action Replay cartridge's monitor, or similar, and enter the first ML version of program 2.1.

When you've got the program in okay, enter `G C000` from within the monitor to execute the piece of machine language. You should get the same effect as with the Basic program. Now try the second version of the same thing, the one on the right in the box.

I prefer the first one because it looks neater, but both ML programs do exactly the same job. The second one uses different registers. However, you will notice that the `LDX` at `$C002` does not change the value in the accumulator, set at `$C000`. Of course you wouldn't expect it to. When you say `X=5` in Basic, it doesn't change what variable `A` is. Just make sure that your `LDA`s match your STAs and so on. There would be no point changing the border colour by doing `LDA #$05` followed by `STY $D020` because you would be doing `A=5:POKE 53280,Y` which doesn't make much sense.

■ ADDRESSING MODES

I touched upon the subject of different addressing modes last month. These are the ways that you refer to commands. When you put a hash sign before numbers, it is called immediate addressing. Why? Because the number is immediately obvious to the computer; the C64 doesn't have to think about where it's got to get the number from. The other addressing mode you've seen is absolute addressing. That's when you refer to actual memory locations. So `LDA #$05` uses immediate addressing and `STA $D020` uses absolute addressing.

■ ABSOLUTELY FABULOUS

Although you can't use immediate addressing with store instructions, you can use absolute addressing with load instructions. Confused? Well, say you wanted to do `A=PEEK(1024)`. This means load the contents of location

■ PROGRAM 2.1

■ BASIC

```
10 POKE 53280,2:  REM BORDER COL
20 POKE 53281,5:  REM BACKGROUND COL
30 POKE 53248,170:REM HORIZ POSITION
40 POKE 53249,140:REM VERT POSITION
50 POKE 53287,7:  REM SPRITE COL
60 POKE 2040,0:   REM SPRITE POINTER
70 POKE 53269,1:  REM ENABLE SPRITE
80 END:           REM BACK TO BASIC
```

■ MACHINE LANGUAGE

```
> C000 LDA #$02     > C000 LDA #$02
> C002 STA $D020    > C002 LDX #$05
> C005 LDA #$05     > C004 STA $D020
> C007 STA $D021    > C007 STX $D021
> C00A LDA #$AA     > C00A LDX #$AA
> C00C STA $D000    > C00C LDY #$8C
> C00F LDA #$8C     > C00E LDA #$07
> C011 STA $D001    > C010 STX $D000
> C014 LDA #$07     > C013 STY $D001
> C016 STA $D027    > C016 STA $D027
> C019 LDA #$00     > C019 LDX #$00
> C01B STA $07F8    > C01B STX $07F8
> C01E LDA #$01     > C01E LDX #$01
> C020 STA $D015    > C020 STX $D015
> C023 RTS          > C023 RTS
> C024              > C024
```

■ COMMANDS SUMMARY:

LDA Load accumulator with value
LDX Load X register with value
LDY Load Y register with value

STA Store accumulator in memory
STX Store X register in memory
STY Store Y register in memory

INX Increment X register by one
DEX Decrement X register by one

INY Increment Y register by one
DEY Decrement Y register by one

CMP Compare accumulator with value
CPX Compare X register with value
CPY Compare Y register with value

BEQ Branch if equal
BNE Branch if not equal

■ PROGRAM 2.2

■ MACHINE LANGUAGE

```
> C000 LDA $0400
> C003 LDX $D800
> C006 STA $0427
> C009 STX $D827
> C00C LDA #$07
> C00E STA $0400
> C011 STA $D800
> C014 RTS
> C015
```

■ LINE-BY-LINE ANALYSIS

- Load value at `$0400` into accumulator. The value at `$0400` is the screen code for the character in the top-left-hand corner of the screen.
- Load value at `$D800` into X register. The value at `$D800` is the colour code for the top-left-hand character.
- Store the contents of the accumulator at `$0427`. This represents the top-right-hand corner of the screen. As the accumulator contains the screen code for the character in the top-left, this has the effect of copying that character to the right-hand side.
- This copies the colour from the top-left to the top-right.
- Load the accumulator with the number 7.
- Store 7 at location `$0400`. This is the same as `POKE 1024,7` and will put the letter G in the top-left corner of the screen.
- The contents of the accumulator are unchanged, so this stores the number 7 again, but this time at location `$D800`. This is the same as `POKE 55296,7` and will change the colour of the G to yellow.
- Everything is neatly tidied up with the `RTS` which brings to an end the machine language routine.

PROGRAM 2.3

MACHINE LANGUAGE

```
> C000 LDX $0400
> C003 INX
> C004 STX $0401
> C007 INX
> C008 STX $0402
> C00B DEX
> C00C DEX
> C00D STX $0403
> C010 LDY #$01
> C012 STY $D800
> C015 STY $D801
> C018 DEY
> C019 STY $D802
> C01C STY $D803
> C01F RTS
> C020
```

LINE-BY-LINE ANALYSIS

- First of all the contents of `$0400` are read into the X register. This is the equivalent of `PEEK(1024)` and finds out what screen code is at the top-left corner; it should be a 1 for the letter A.
- This is then incremented. Now the X register holds the value 2.
- The value in the X register is stored at `$0401`, putting a B next to the A.
- Again the X register value is incremented.
- The value is then stored at `$0402`, putting a C next to the B.
- The X register is then decremented twice, back to 1.
- The value is then stored at `$0403`, putting another A next to the C.
- The value 1 is now loaded into the Y register.
- This is stored at `$D800` and `$D801`, the first two locations in the colour map. This makes the first two letters white.
- The value is then decremented to 0
- Storing the value in the next two locations of the colour map make the C and second A black.

1024 into the accumulator and is done in machine code by `LDA $0400` (where $0400 is the hexadecimal equivalent of 1024). You see there is no hash sign there; that tells the computer that you want to load the accumulator with the contents of a memory address and not a simple number.

You are not restricted to using the accumulator for immediate or absolute addressing. You can use any of the three registers. Try program 2.2 out – remember, entering it in a way that your monitor understands would be sensible, and execute it with `G C000`. There's a full explanation of how it works given in the box; $0400 is the start of screen memory, and $D800 is the start of colour memory.

COUNTERS

Things that count are called counters. It may not strike you as a world-shattering statement, but it's true. In ML, the X and Y registers are used for most counting, simply because there are instructions devoted to doing just that. The problem is you have to learn some new words; like counting upwards is called incrementing, and counting downwards is called decrementing. Adding one to the value in the X register is incrementing the X register. Likewise, decrementing the X register is subtracting one from the number. Simple, eh?

The technical difficulty comes when you get to 255. Because that's the largest number the computer can store in one byte of memory, it resets to 0 when you increment past it. And down at zero, when you decrement, you go back to 255. The Y register works in exactly the same way as the X register.

The commands that change the X and Y register are INX, DEX, INY and DEY. These stand for INcrement X, DEcrement X, INcrement Y and DEcrement Y. Enter program 2.3, a short ML proglet. Now clear the screen and type A so that it appears in the top-left corner of the screen. Move down the screen a bit and execute the code with `G C000` from your monitor. You should see `ABCA` appear along the top line; the first two letters in white and the second two in black.

The INX, INY, DEX and DEY instructions are called implied. There is no operand, no number after the instruction. Wherever there's no number, it means it's implied. In this instance the implication is a 1.

PROGRAM 2.4

BASIC

```
10 FOR Y=0 to 255
20 FOR X=0 to 255
30 NEXT X
40 NEXT Y
```

MACHINE LANGUAGE

```
> C000 LDY #$00
> C002 LDX #$00
> C004 INX
> C005 BNE $C004
> C007 INY
> C008 BNE $C002
> C00A RTS
> C00B
```

LINE-BY-LINE ANALYSIS

- The Y and X registers are loaded with the value 0.
- The value in the X register is incremented by one.
- If it has not wrapped round to zero, the routine goes back and increments the value again.
- The value in the Y register is incremented by one.
- If it has not wrapped round to zero, the routine goes back to the instruction that loads the X register with zero and does another loop incrementing that.

NO COMPARISON

You've seen the ML equivalent of `X=X+1` (`INX`), so how would you do something like `IF X=5 THEN END`? Well, in ML you use compare instructions. You can compare any of the registers with any number, or memory location. The compare instructions are `CMP`, `CPX` and `CPY`. However, there is no point comparing something unless you are going to do something depending on the result. For this we need branching.

BRANCH OFF

A branch is a GOTO statement. Simple branching involves seeing if something is equal or not equal to a number. So, for example, you could try out this:

```
> C000 LDX $0400
> C003 CPX #$01
> C005 BNE $C00B
> C007 INX
> C008 STX $0400
> C00B RTS
> C00C
```

That loads the value at $0400 into the X register. It then compares the X register with the number 1. `BNE` means Branch if Not Equal and the number following it is an address. You will see that the instruction at $C00B is `RTS` which ends the machine language routine. So, if X is not equal to 1 – in other words, if the letter A was not in the top-left corner of the screen – then go to $C00B in the program. Otherwise, add one to the X register and store it at $0400. This will change the A into a B.

There are eight different methods of branching, but we'll only look at this one and `BEQ`, Branch if EQual. If you changed the `BNE` or `BEQ`, the program would go to $C00B only when the X register is equal to 1. Every other time it would add one to the value and store it back to $0400.

A little later in the series we'll look at the other six methods of branching, because if I told you all about them now your head would probably explode with the amount of info trying desperately to find spare bits of your brain.

GOING LOOPY

Looping is the art of changing a number from its starting value into another one until it reaches its ending value. In Basic, FOR X=1 to 10:NEXT X is a loop that does nothing exciting. In ML the equivalent is:

```
> C000 LDX #$01
> C002 INX
> C003 CPX #$0A
> C005 BNE $C002
> C007 RTS
> C008
```

You load the X register with the value 1, then you increment it, so that it becomes 2. You compare it with 10 ($0A in hexadecimal) and if it is not equal to 10 you go back to $C002 and increment it again. You repeat that until it does equal 10, in which case it will not branch and will instead hit the `RTS` and end the routine. That's looping in ML, and it usually uses the X or Y register.

Because ML is so fast, a loop like that will be over before it's begun. Lightning's got nothing on a short ML loop. You can do things called nester loops. Take a look at program 2.4. The Basic version would take somewhere in the region of a very long time to execute. The ML version will still take a few seconds. In the ML you can see `BNE` instructions without any compare instructions before them. This is because the computer will sense when the X and Y registers have 'wrapped' to 0. Remember, they go 0,1,2...254,255,0,1... and the branch will occur every time until the register is reset to zero.

PROGRAM 2.5

MACHINE LANGUAGE

```
> C000 LDX #$00
> C002 LDA #$03
> C004 STA $0400,X
> C007 INX
> C008 CPX #$F0
> C00A BNE $C004
> C00C RTS
> C00D
```

- A zero is stored in the X register.
- A three is stored in the accumulator which is the screen code for the letter C.
- The value in the accumulator is stored at location `$0400+X`. The first time around, the 3 is stored at `$0400`, the next time at `$0401`, then `$0402` and so on.
- The X index register is incremented by one.
- The computer checks to see whether it has reached 240 (`$F0`) yet.
- If it has not, the program goes back to store the accumulator at the next location.

INDEXING

The X and Y registers are actually index registers. Indexing is the process of adding the contents of a register to a number in order to make a new number. For example, `X=5:A=PEEK(1024+X)` in ML would be:

```
> C000 LDX #$05
> C002 LDA $0400,X
> C005
```

The value of the register is added to the value given in the load instruction in order to calculate the address. You cannot use indexing with immediate addressing.

So try out program 2.5. You should have no problem working out why the first six lines of the screen are filled with the letter C.

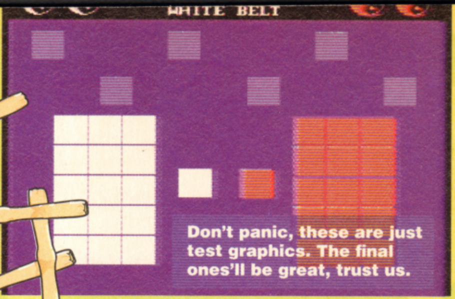
NEXT MUNF

There's more about indexing next month, including how to take the first five characters of the screen and repeat them all the way along the bottom (though why you would ever want to do that is completely beyond me). I'll explain accumulator addressing modes, go into more detail on implied addressing and will cover jumping and returning so that you can create sub-routines. I'll also tell you all about zero page and will give you some useful ROM routines that will allow you to print to the screen properly and input from the keyboard. Don't have nightmares.

MAKING 10TH DAN

Jon Wells and his team are aiming to write the best C64 beat-'em-up ever. This month Jon relives the trauma of trying to make it the best-sounding beat-'em-up ever as well.

DIARY OF A GAME: MONTH THREE



Don't panic, these are just test graphics. The final ones'll be great, trust us.

Yes! It scrolls! Well, it was a great personal triumph for me (as you'll know if you read last month's diary), but that was just the first hurdle. And the hurdling continues this month, but someone's made the hurdles a bit higher this time. Er, it was me, actually; I will just keep on getting these wild, groundbreaking ideas.

Now I've got the scroller working, it's time to start bolting other important parts to the main routine – like the sprite multi-plexor for instance. Armed with a hammer, nails and a screwdriver – and after almost blowing up the C64 – I get to work. Before all that, though, remember me mentioning last month about the scroller moving at 32 pixels (four characters) every 50th of a second? Well, it was just too fast; so I decided to give it a maximum speed of16 pixels (two characters) every 50th – even this is pretty darned nippy, but at least you can see what's going on.

NEW NAME, NEW JOBS

There's been a re-shuffle of the team-work and a change of name. Paul's still doing the music, but Phil's going to handle all the graphics and INTRO/END SEQUENCE programming, while I'll be coding the game itself! Also, we've scrapped the SPACE-TIME group name, and are now formally VISUALIZE DEVELOPMENT GROUP, as we're recruiting more programmers, and the new name's more appropriate. That's how it's going to stay folks!

MAPPING IT OUT

I've also managed to compact the scroll code, which now operates under a super-fast processor time of up to $20 rasterlines, on-screen. I've been working on a 4x4 Block and Map editor as well and it's turning out quite well. I've based the Block and Map idea on the *SEUCK*-style structure; you can make and use up to 256 different 4x4 blocks with colour in every character, and plot this in a massive 25 horizontal line screen map. This can all be saved to disk and used in anything! I'll be using this editor in future high-speed horizontally-scrolling games.

Extra parts I included in the map editor include the ability to split the screen colours; this gives us more colours to play around with and will allow us to make the backgrounds look as good as if they were created in Bitmap mode. You can even load in music that you can listen to while you work. I'll be adding a character editor to whole utility next, which will be even better.

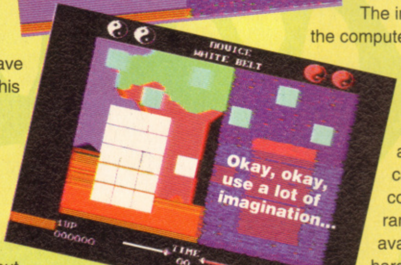
SAMPLE PROBLEMS

I had a few qualms about including samples. The trouble is they take up loads of memory and raster time and also interfere with raster interrupts. This last problem is the biggest because the scroller needs exact interrupt timing, as do the multiplexed fighter-sprites, otherwise the game would totally glitch everywhere, and slow down.

But I'm going to attempt it anyway – yes, I am mad. If I can get it to work, though, it'd be a massive boost for the C64 and also for the game in two ways; first, there's never been a full-screen, colour, scrolling game on the Commodore 64 with samples, and secondly, I've developed a system which can play all three channels and a fourth with samples – only it works perfectly on any C64, even the NEW C64; so no more quiet samples. And for the first time ever on national 64 TV, they can be filtered – WOW!

From all the types of sample routines to try, I opted for the synthesis style as this uses less memory. Both *Fist* games use the synthesis routine, so I decided to test my own version on their samples. This saves me time, as it's harder to do synthesis samples than, say, true samples which I'd have to do manually. And don't forget – this may not operate with the scroller.

Just use a smidgen of imagination, all right?



Okay, okay, use a lot of imagination...

A FEW DAYS LATER...

I ran up against a few problems with the real-time timing of the samples. They were playing okay, but just didn't sound right and you couldn't tell what the hell all that noise is about. Aarrrgh! Ahhhh... *(er, is that your impression of how they sounded? – Dave)* No, that was me when I found out what was happening – the routine doesn't operate under NMI control, it will only work under IRQ interrupt – not good news since the scroller is under IRQ.

I've come up with a last minute ditch attempt of an idea (If that makes sense!). The IRQ holds two timers – A and B. The main interrupt uses timer A, and timer B can be used for real-time applications, like samples!

It's not going to be easy, though. In fact, it's going to be damn near impossible. I've got to calculate two IRQs at the same time, with exact scroll and sprite plexor timing! I've got a headache.

A FEW HOURS LATER

What! Is that the time? 8:39 am? I've been awake all night trying to get that sampling working. It's not looking good – the samples work fine, but the scroller is flickering all over the place. I'd better get some sleep and try a bit later....

It's much later the same day now and I still can't get it to work, but I'm not giving up! Looking at my watch – it's 4:13 am, and I'm screaming my head off waking up the neighbours... YES, I've finally done it! I've even coded the sprite multiplexor and everything's working fine. There are now 54 sprites on-screen at once plus a full-screen, 16-pixel scroll with graphics in the borders, along with perfect samples... and there's not a glitch in sight! Good eh?!! Is there nothing the 64 can't do?

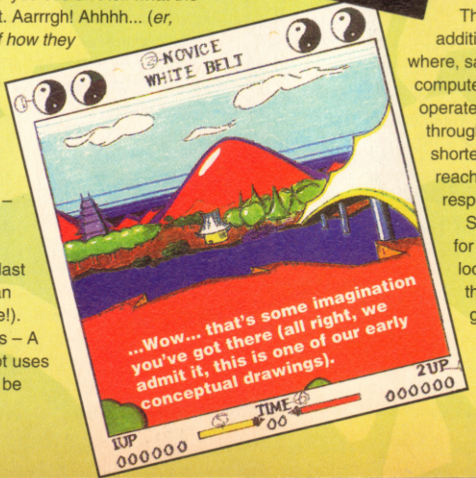
I've re-written the sample player routine and have compacted my own samples; they're only $700 in hex which is smaller than your average character set! The new player can change the speed of each sample, slow it down or speed it up. It can also play the samples backwards, which works quite well, and sounds weird. What we can expect now is a game with loads of different samples, unlike the past beat'-em-ups which have about three at the most!

INTELLIGENCE

I've also been working on the computer's intelligence. Although I haven't had time to test it yet it works something like this: imagine your sprite is on the far left side of the screen, and the computer player is on the far right. The intelligence routine will calculate if the computer player is within attacking distance; if not, the computer will move towards player one, and test the routine again. If the computer player is within attacking distance, the C64 will calculate which moves would connect; it will then select a random move from the ones available. As you progress to harder levels, the computer will pick the more powerful moves more often.

The routine needs one more addition – a response timer! This is where, say, on NOVICE level, the computer will take about four seconds to operate every move, but as you progress through the levels, this time limit will get shorter and shorter. By the time you've reached 10th Dan, the computer will be responding instantly.

So far I've done a few test graphics for the backgrounds; although they look rubbish they're just there to get the feel. Phil's sorting some proper graphics; so stay tuned for part four, when you'll really see the game really taking shape! CF



...Wow... that's some imagination you've got there (all right, we admit it, this is one of our early conceptual drawings).

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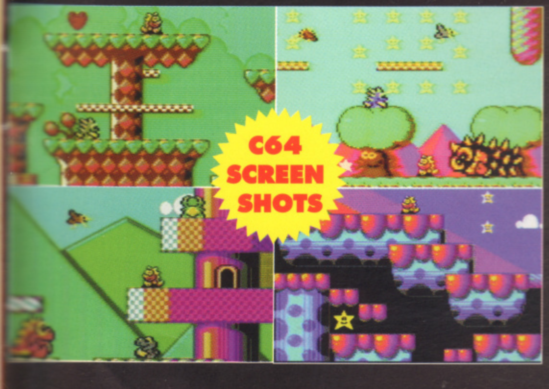

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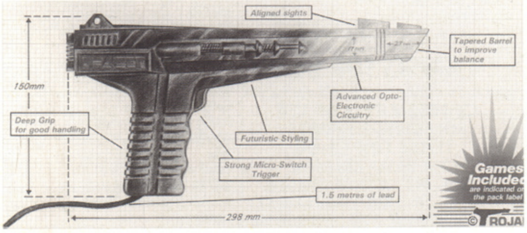
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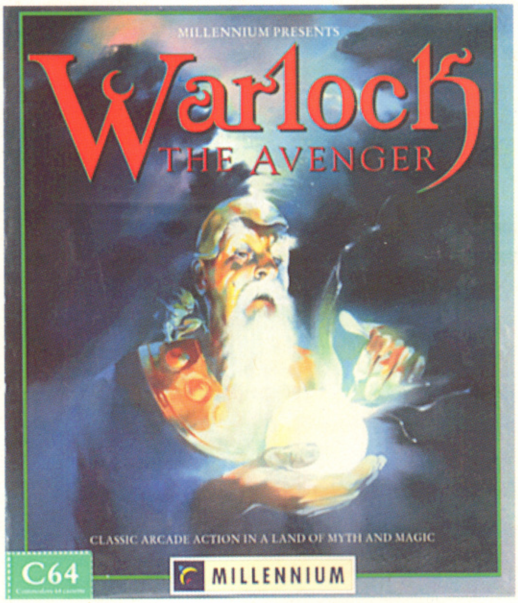

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